FIG. 1

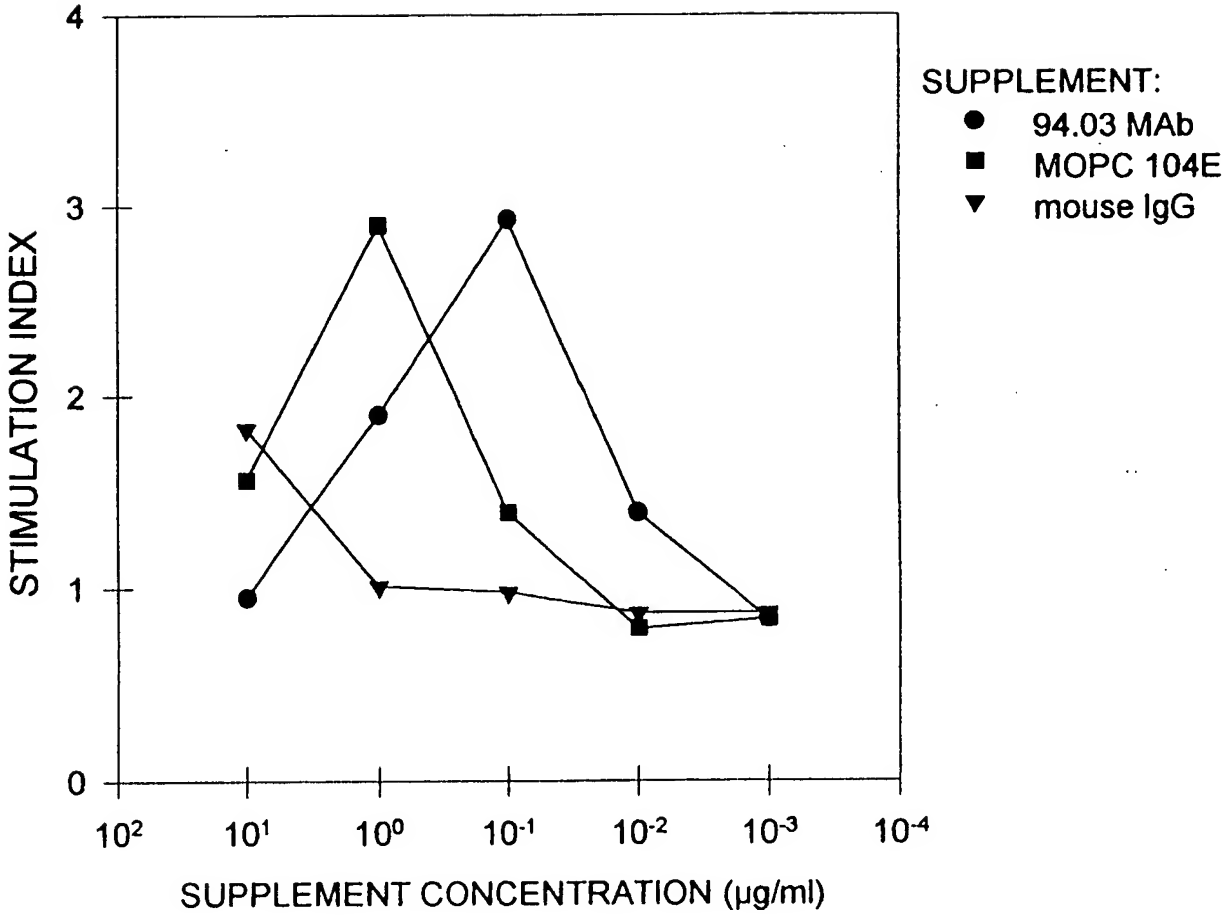


FIG. 2

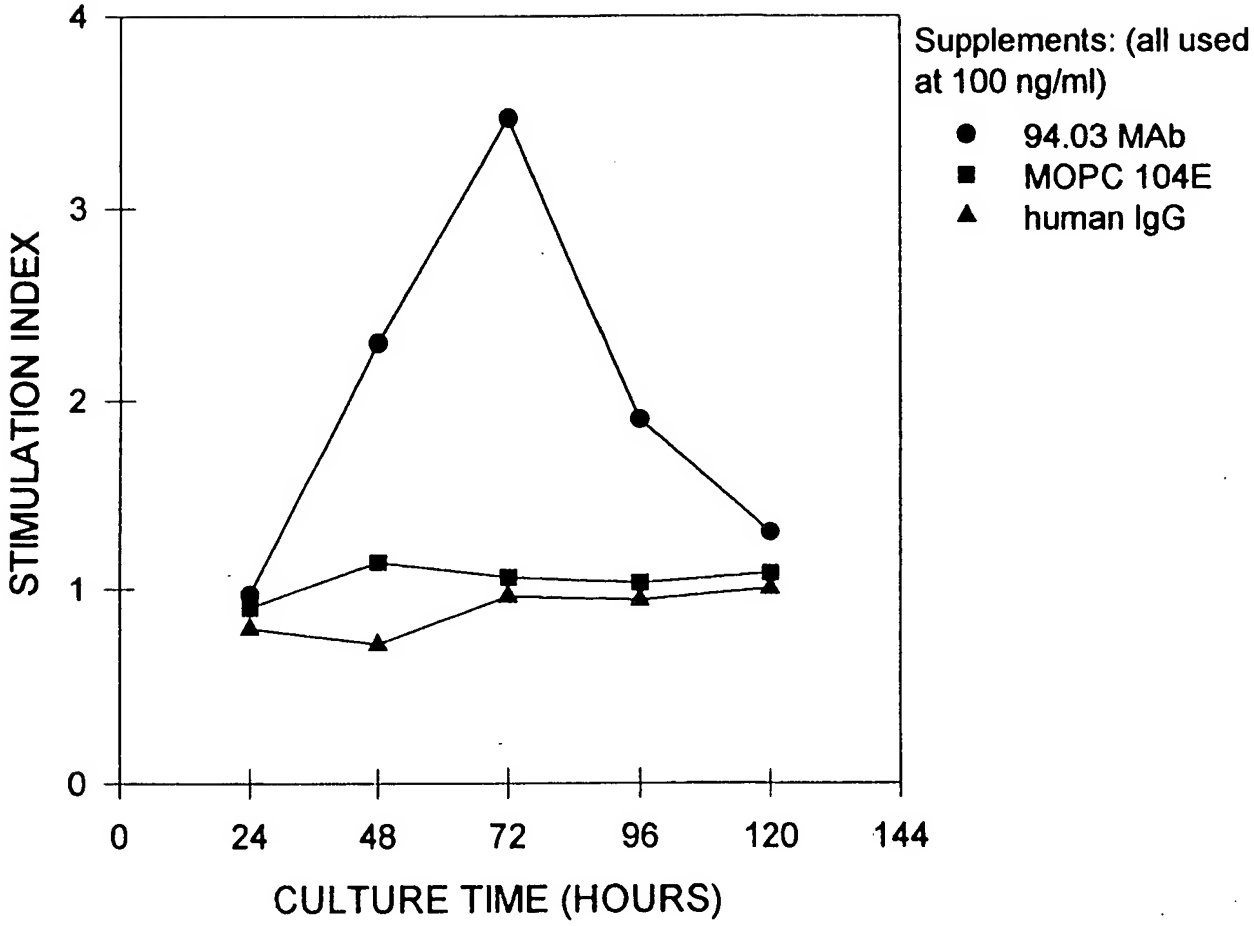


FIG. 3A

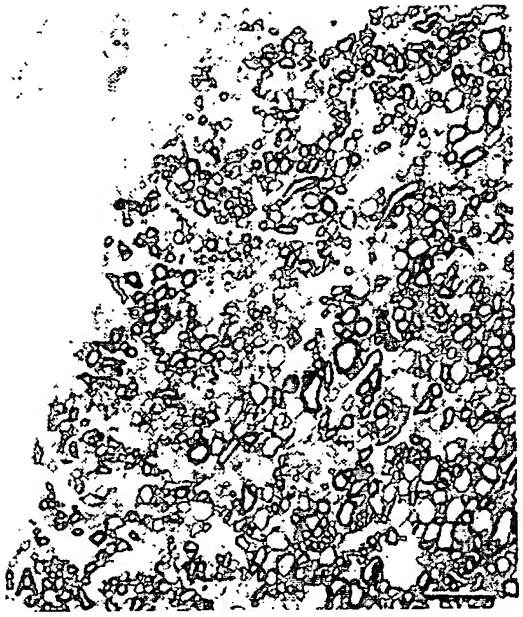
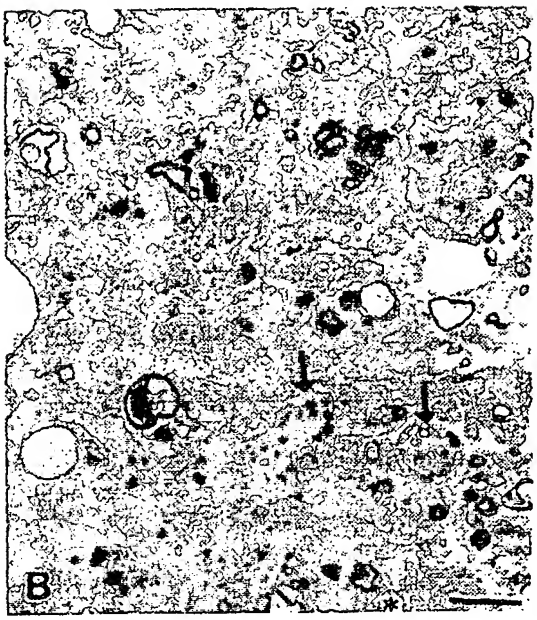


FIG. 3B



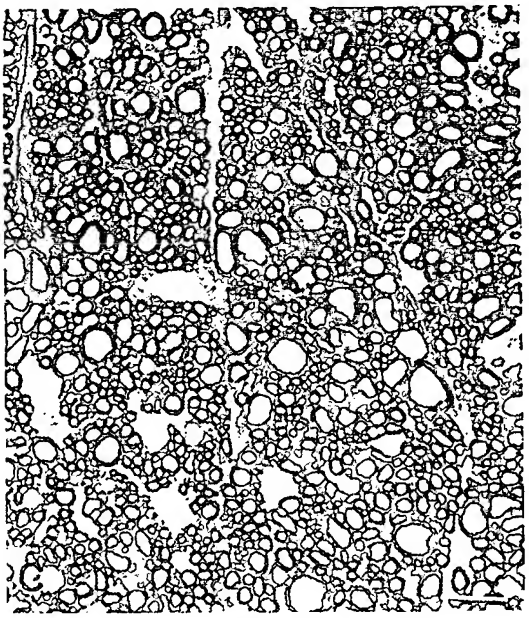


FIG. 3C

FIG. 3D

FIG. 5

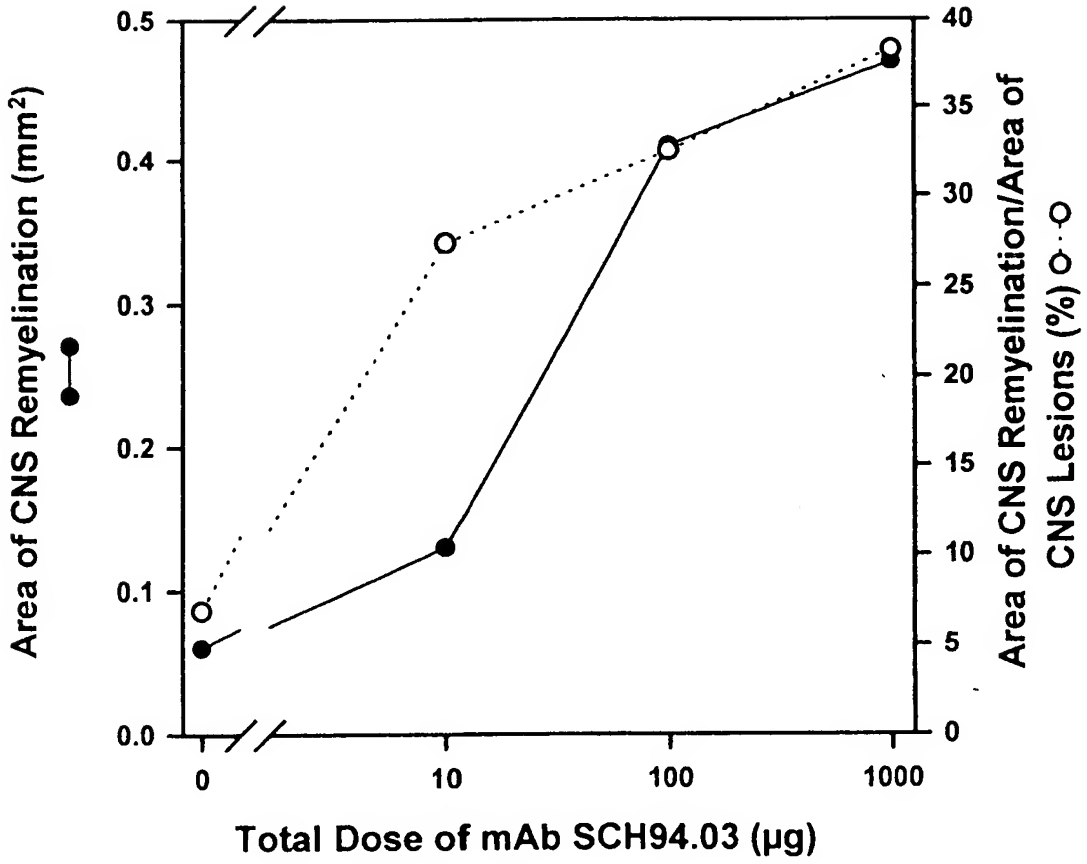


FIG. 6

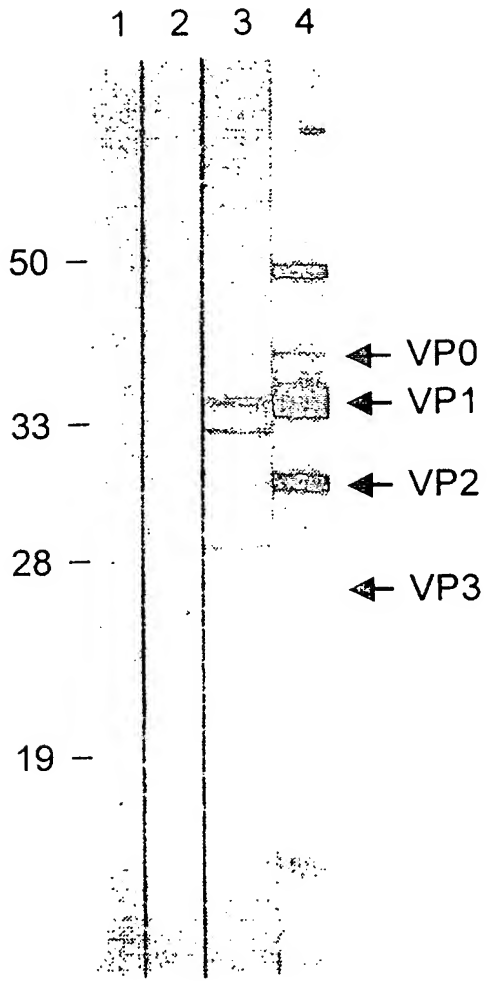


FIG. 7A

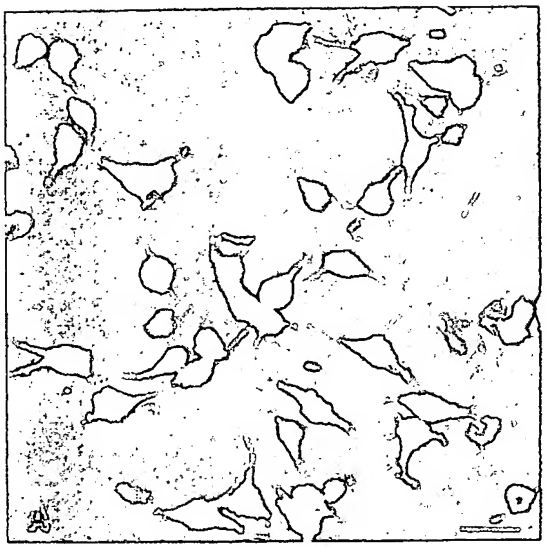


FIG. 7B

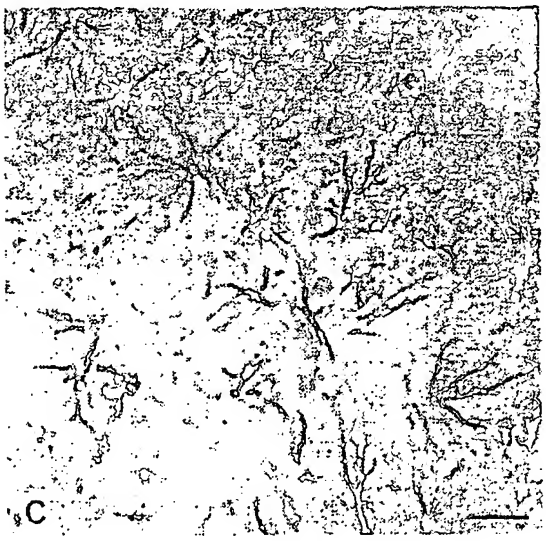


FIG. 7C

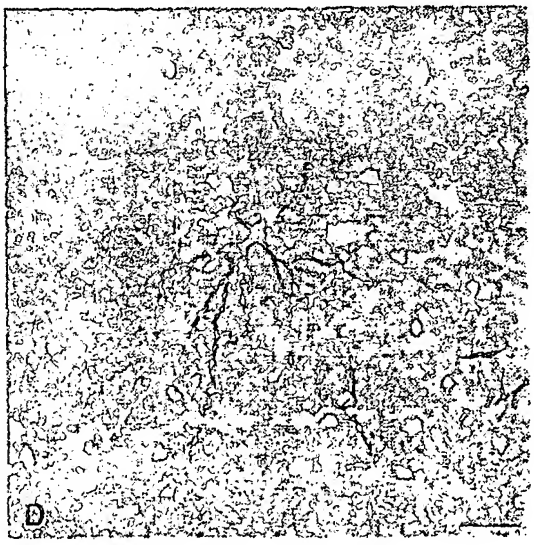
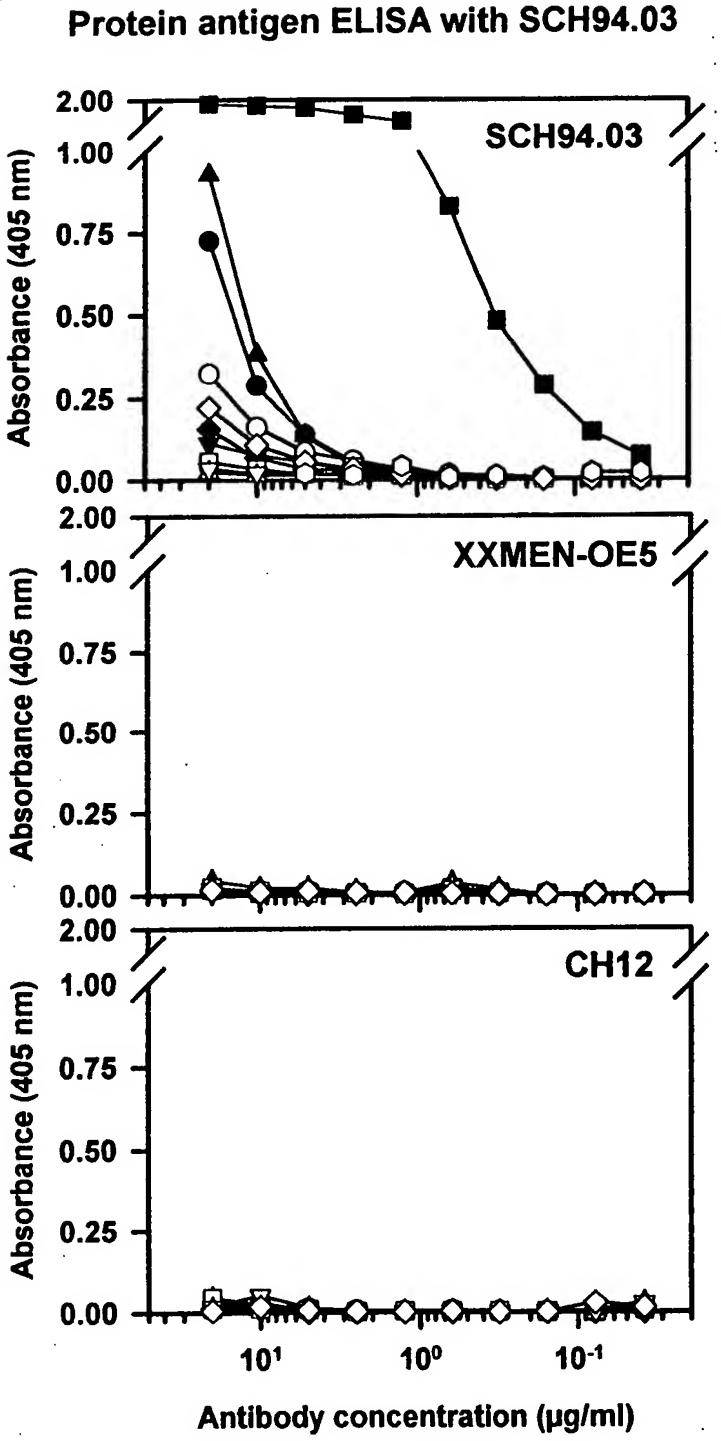


FIG. 7D

FIG. 8A

FIG. 8B

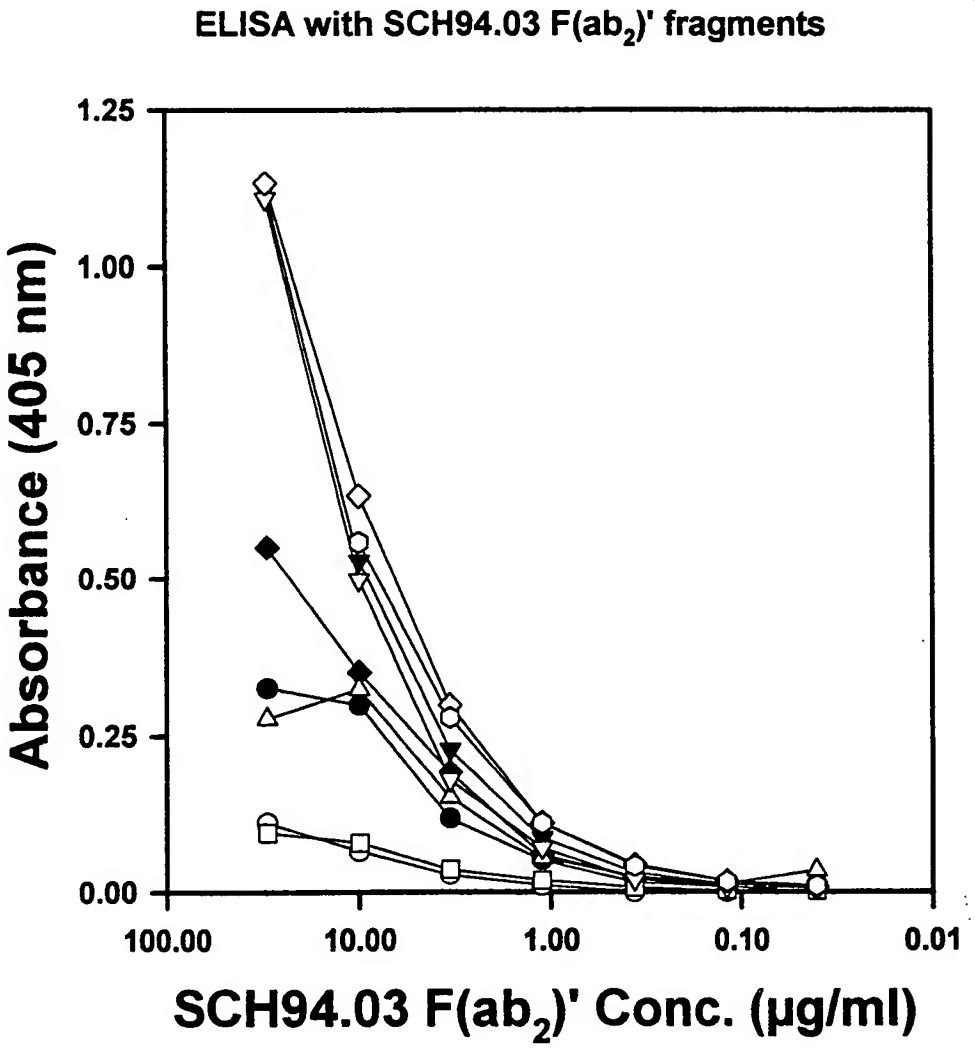
FIG. 8C



Antigen:

- ● KLH
- ■ spectrin
- ▲ hemoglobin
- ▼ vimentin
- ◆ thyroglobulin
- ○ actin
- □ lysozyme
- △ transferrin
- ▽ myosin
- ◇ tubulin

FIG. 9



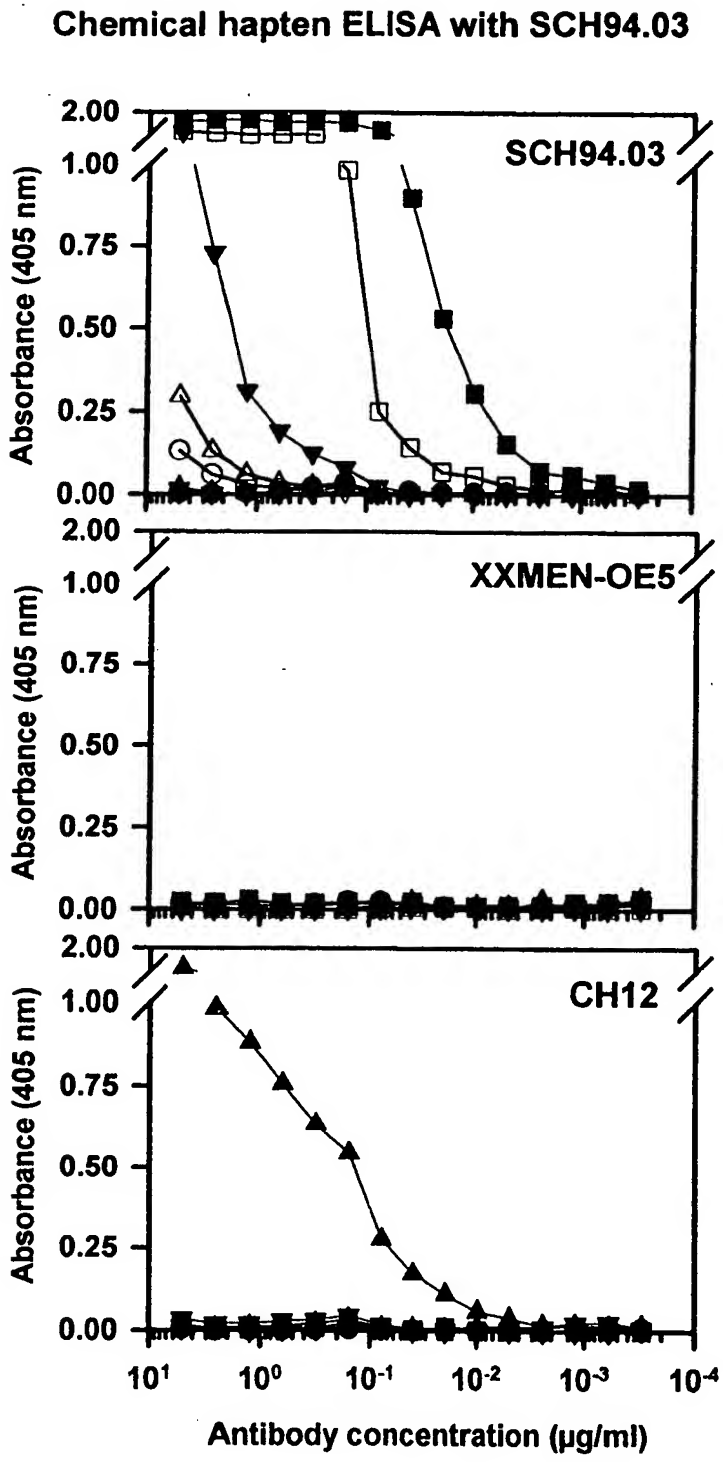
Antigen:

- ● Bovine thyroglobulin
- ▼ Human spectrin
- ◆ Bovine tubulin
- ○ Bovine myelin basic protein
- □ Bovine myosin
- △ Dog myoglobin
- ▽ Trinitrophenyl (TNP)-BSA
- ◇ Rabbit actin
- ⬡ Mouse hemoglobin

FIG. 10A

FIG. 10B

FIG. 10C



IG. 11A Immunoglobulin Light Chain Variable Region Sequence of SCH94.03

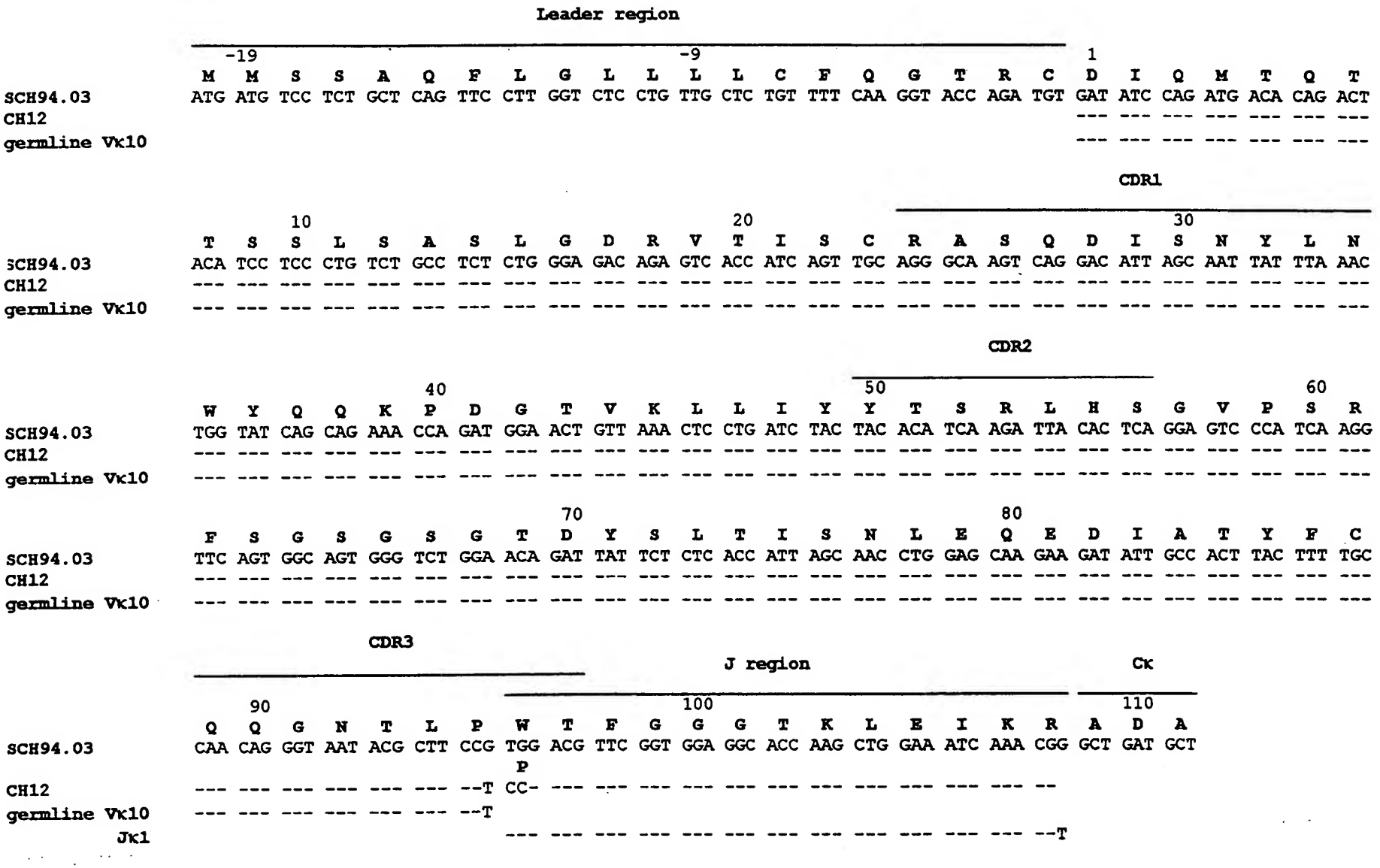


FIG. 11B

Immunoglobulin Heavy Chain Variable Region Sequence of SCH94.03

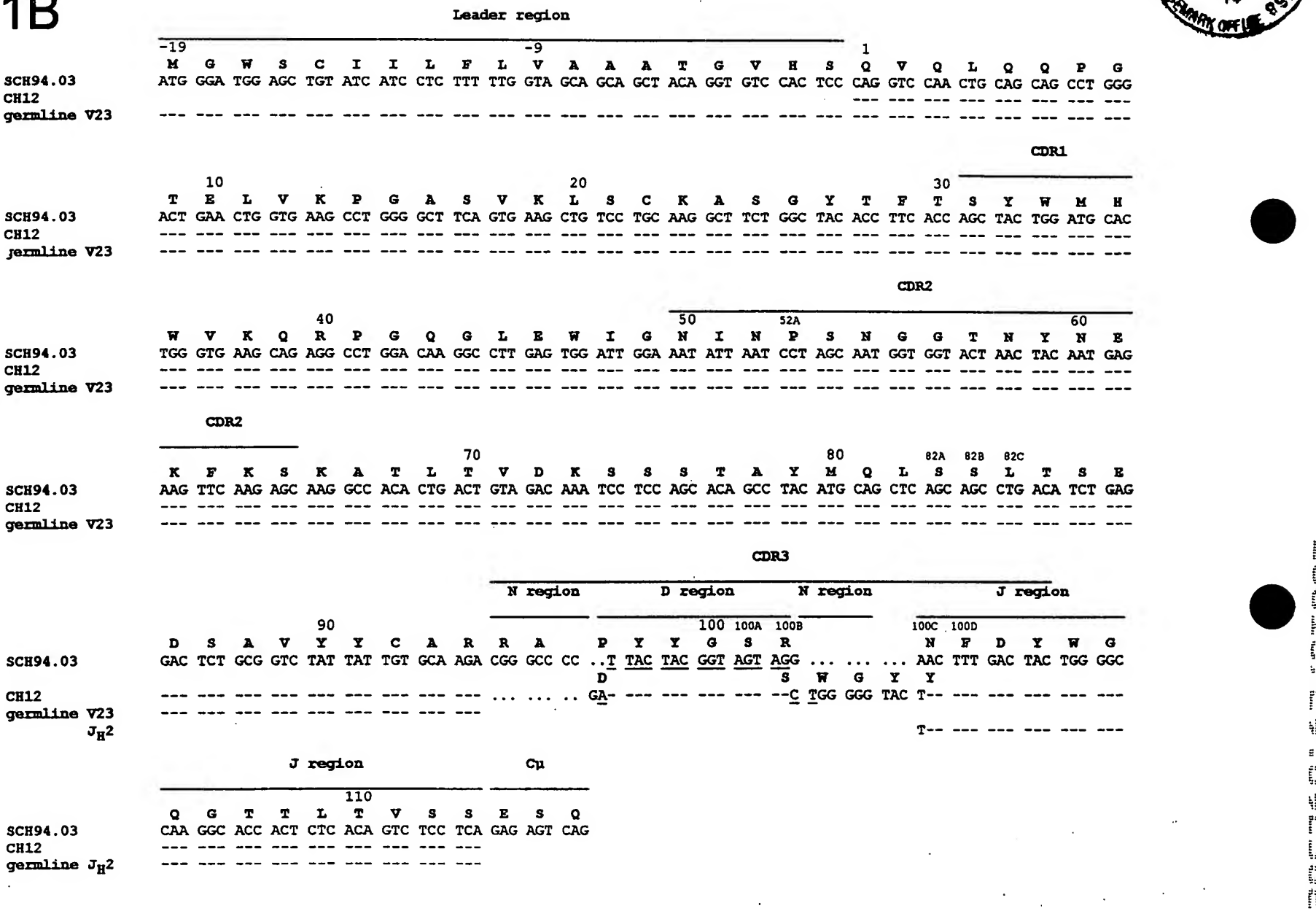


FIG. 12

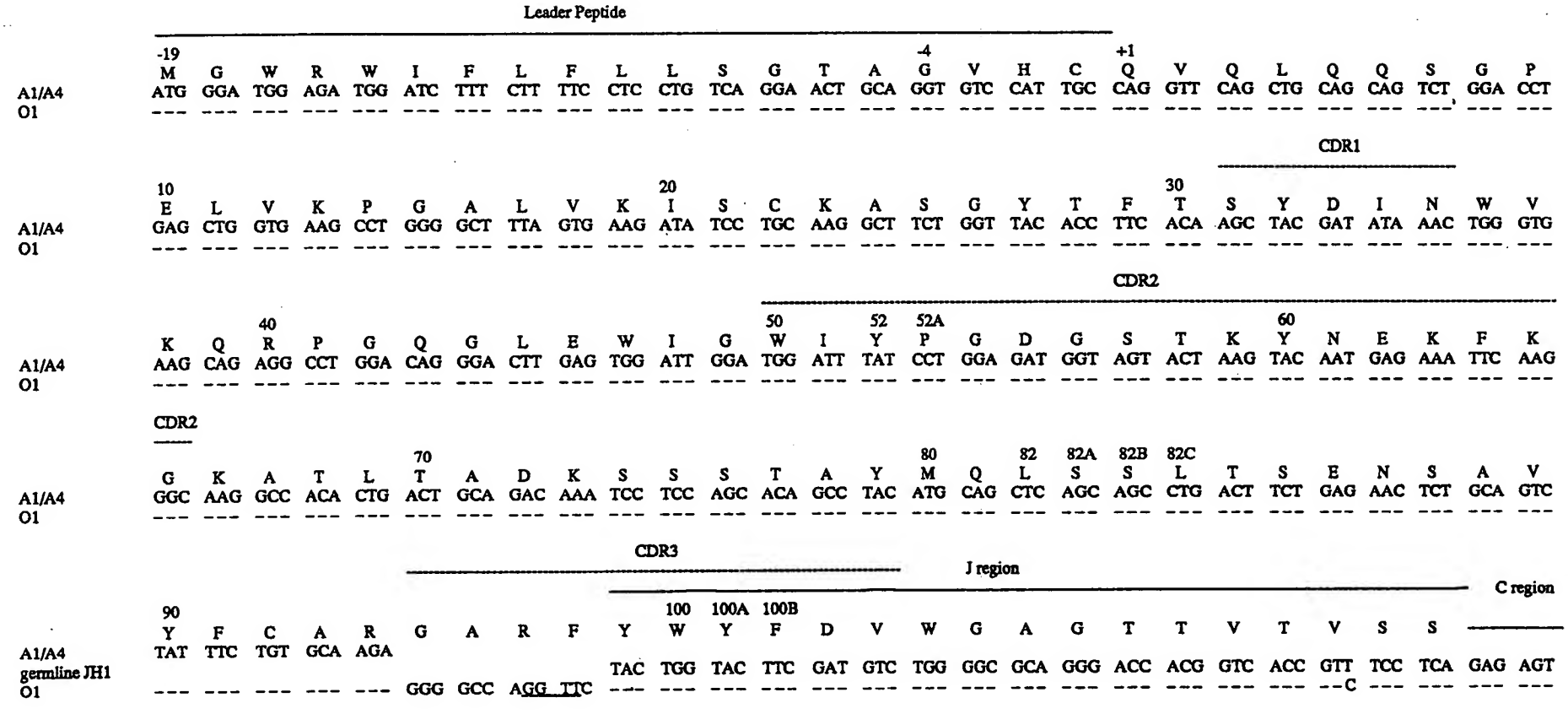


FIG. 13

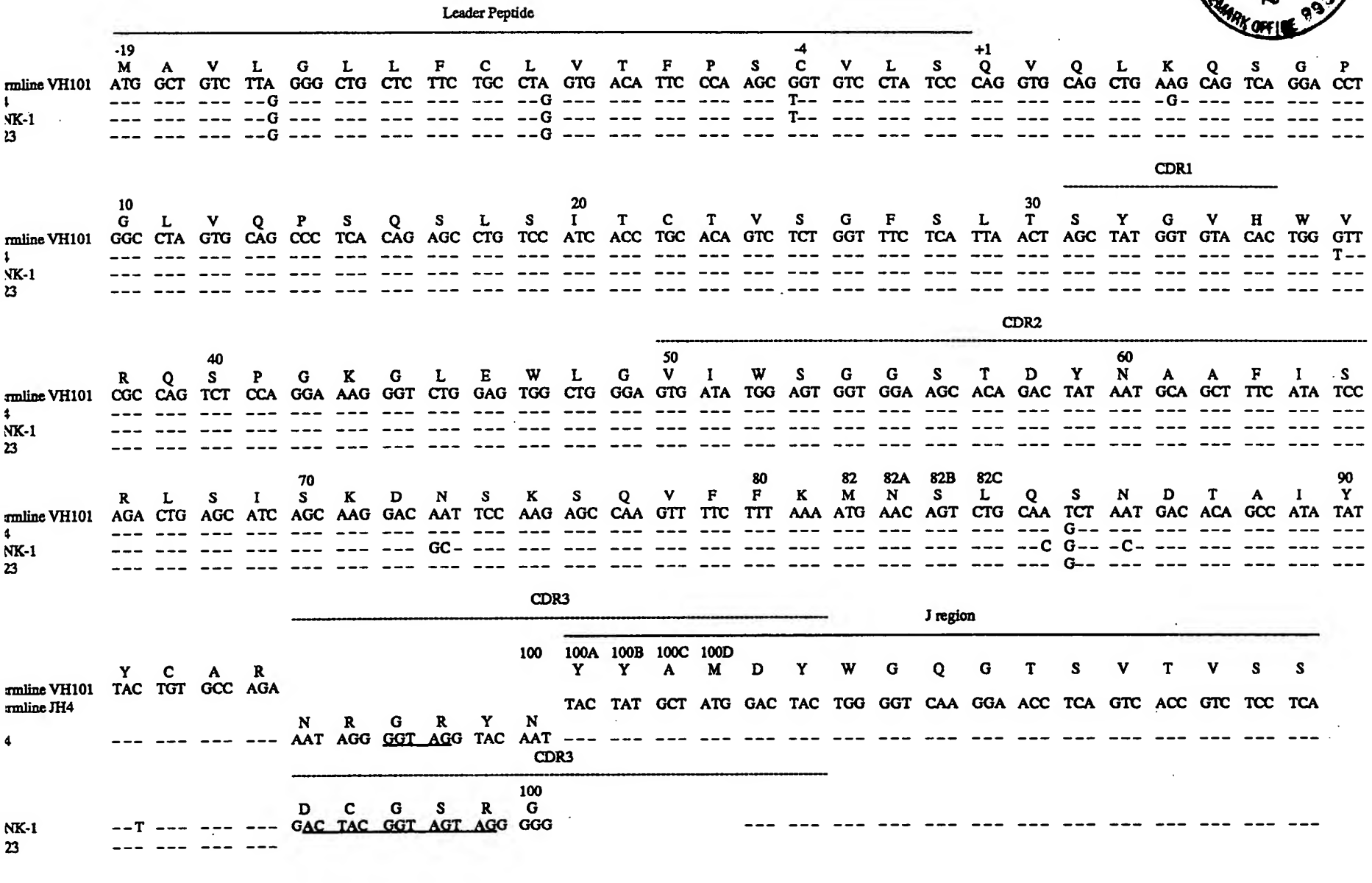


FIG. 14

Leader Peptide

	-19															-4				+1									
	M	K	L	W	L	N	W	V	F	L	L	T	L	L	H	G	I	Q	C	E	V	K	L	V	E	S	G	G
germline V1	ATG	AAG	TTG	TGG	TTA	AAC	TGG	GTT	TTT	CTT	TTA	ACA	CTT	TTA	CAT	GGT	ATC	CAG	TGT	GAG	GTG	AAG	CTG	GTG	GAA	TCT	GGA	GGA
A2B5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--T	---

CDR1

	10										20									30									
	G	L	V	Q	P	G	G	S	L	R	L	S	C	A	T	S	G	F	T	F	S	D	F	Y	M	E	W	V
germline V1	GGC	TTG	GTA	CAG	CCT	GGG	GGT	TCT	CTG	AGA	CTC	TCC	TGT	GCA	ACT	TCT	GGG	TTC	ACC	TTC	AGT	GAT	TTC	TAC	ATG	GAG	TGG	GTC
A2B5	---	C--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

CDR2

			40										50		52	52A	52B	52C				60					
	R	Q	P	P	G	K	R	L	E	W	I	A	A	S	R	N	K	A	N	D	Y	T	T	E	Y	S	A	S
germline V1	CGC	CAG	CCT	CCA	GGG	AAG	AGA	CTG	GAG	TGG	ATT	GCT	GCA	AGT	AGA	AAC	AAA	GCT	AAT	GAT	TAT	ACA	ACA	GAG	TAC	AGT	GCA	TCT
A2B5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--G	---	---	---	---	---	-A-	---	---	---	---	---	---

CDR2

								70										80		82	82A	82B	82C					
	V	K	G	R	F	I	V	S	R	D	T	S	Q	S	I	L	Y	L	Q	M	N	A	L	R	A	E	D	T
germline V1	GTG	AAG	GGT	CGG	TTC	ATC	GTC	TCC	AGA	GAC	ACT	TCC	CAA	AGC	ATC	CTC	TAC	CTT	CAG	ATG	AAT	GCC	CTG	AGA	GCT	GAG	GAC	ACT
A2B5	---	---	--G	---	---	-C-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-A-	---	---	---

CDR3

J region

			90										100	100A	100B			100C										
	A	I	Y	Y	C	A	R	D	A	R	Q	L	G	L	P	A	W	F	A	Y	W	G	Q	G	T	L	V	T
germline V1	GCC	ATT	TAT	TAC	TGT	GCA	AGA	GAT	GCA	C																		
germline JH3																GCC	TGG	TTT	GCT	TAC	TGG	GGC	CAA	GGG	ACT	CTG	GTC	ACT
A2B5	---	---	---	---	---	---	---	GAT	GCA	CGG	CAG	CTC	GGG	CTC	CCG			---	---	---	---	---	---	---	---	---	---	---

J region

	V	S	A
germline JH3	GTC	TCT	GCA
A2B5	---	---	---

FIG. 15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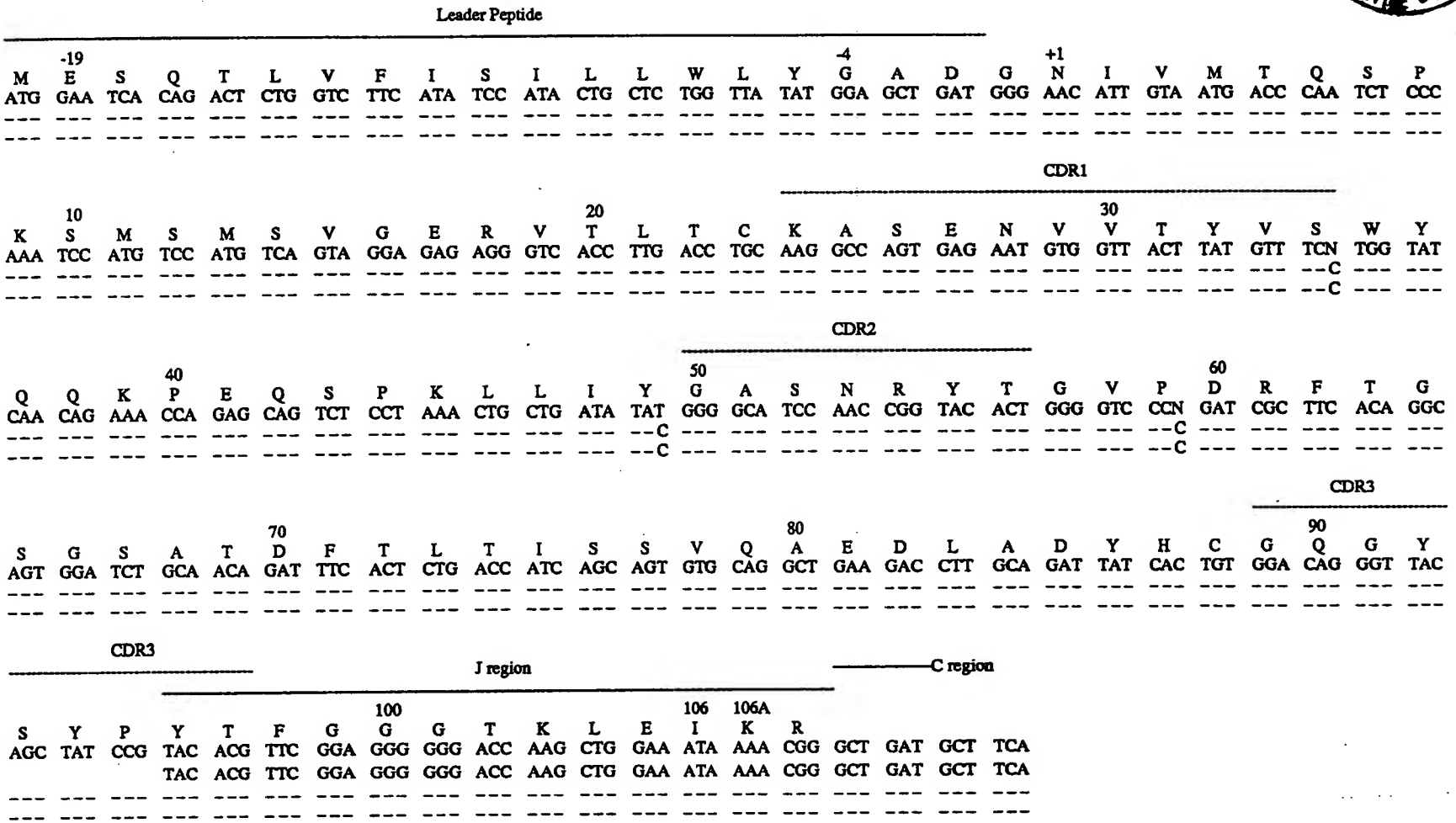

Leader Peptide
CDR1
CDR2
CDR3
CDR3
J region
C region
MOPC21
germline Jκ2
O1/O4
E7

FIG. 16

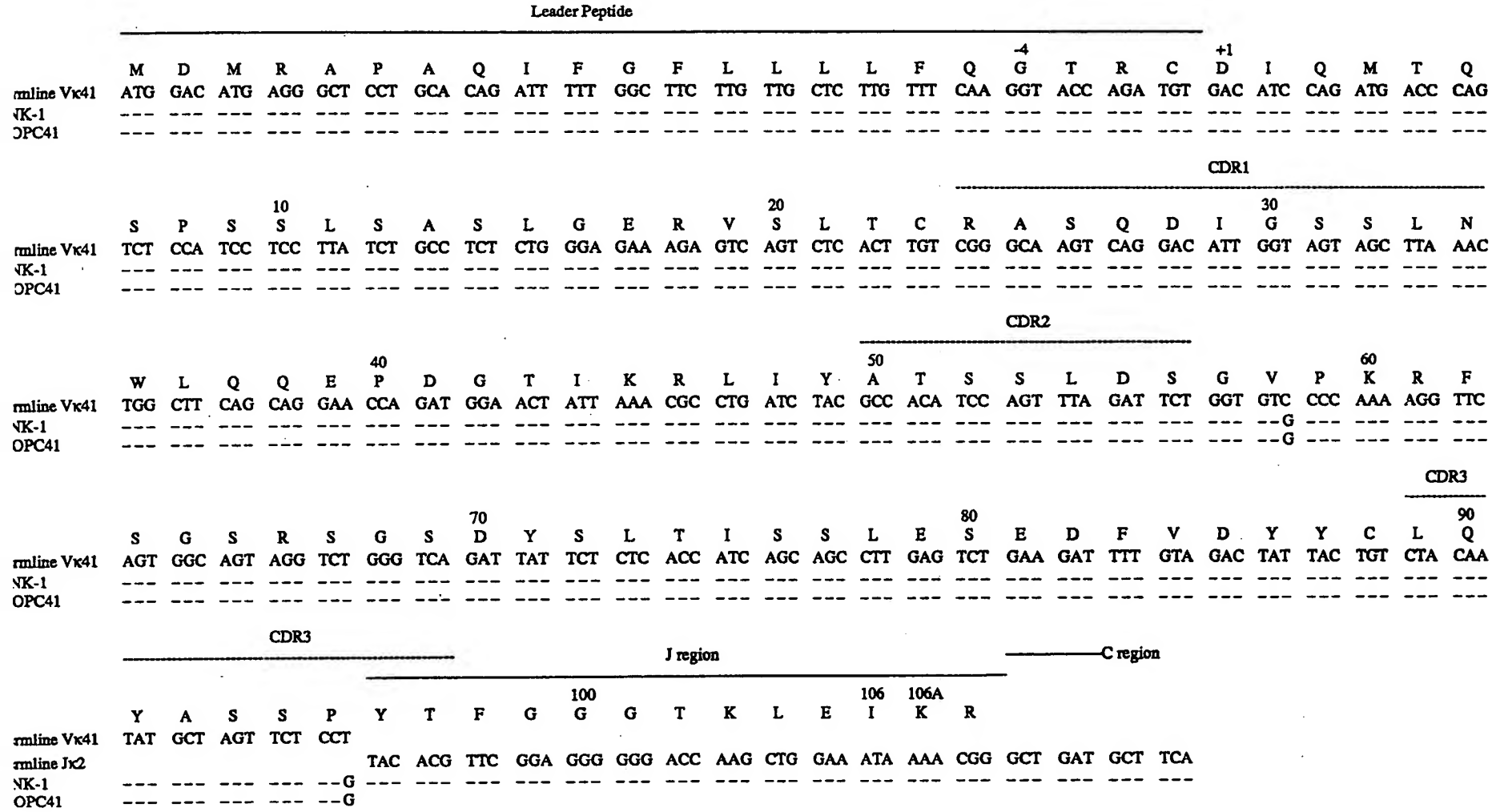

Leader Peptide
CDR1
CDR2
CDR3
CDR3
J region
C region
germline Vκ41
NK-1
OPC41
germline Jκ2

FIG. 17

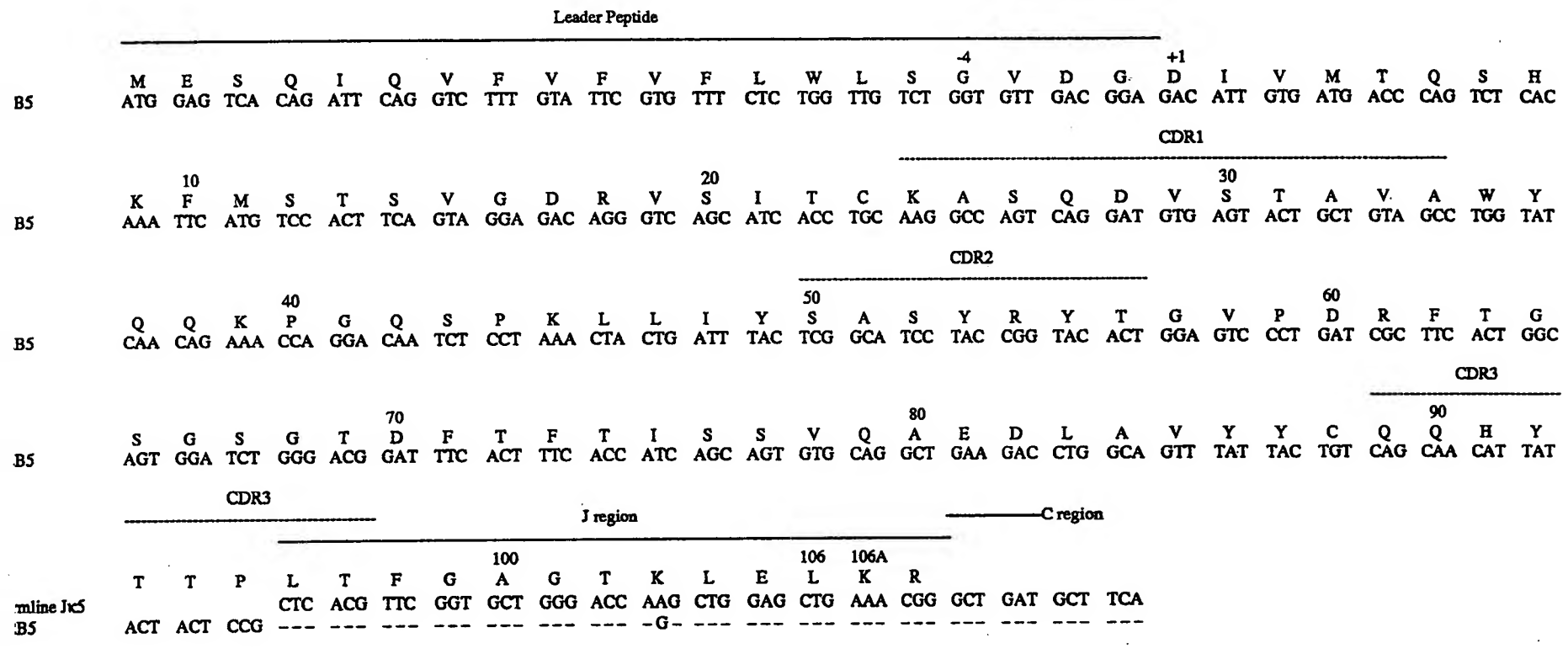


FIG. 18

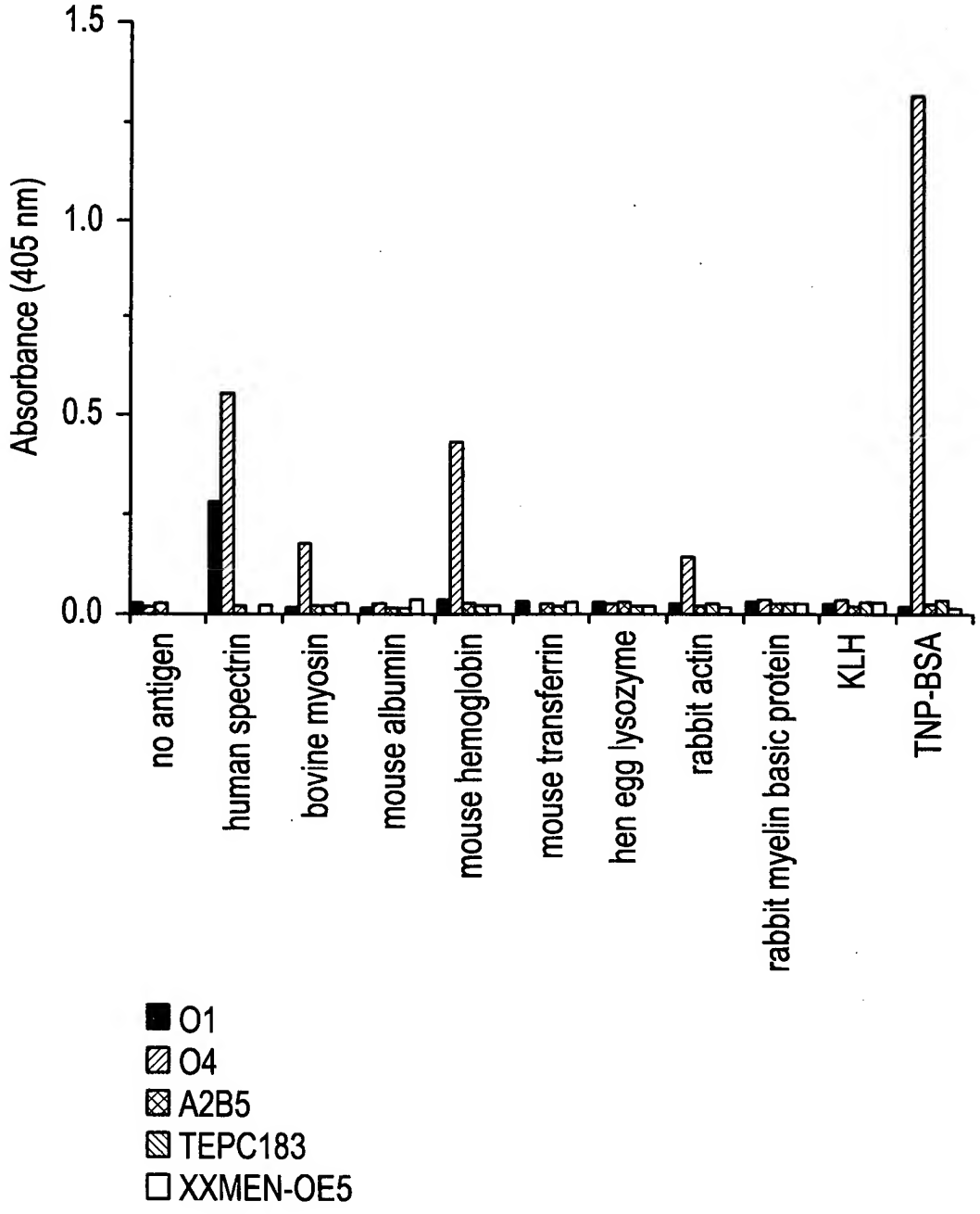


FIG. 19A

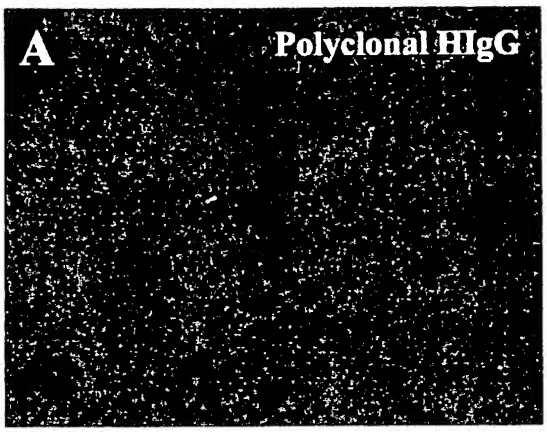


FIG. 19B

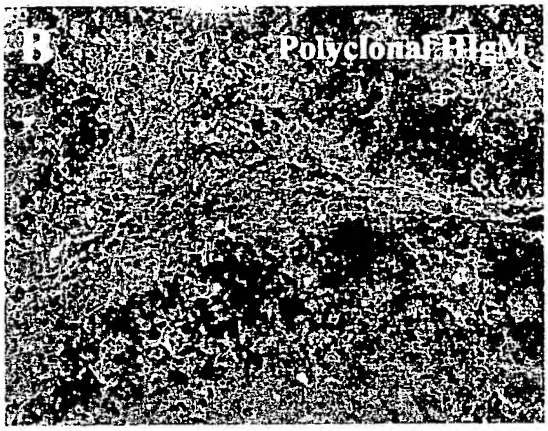


FIG. 19C

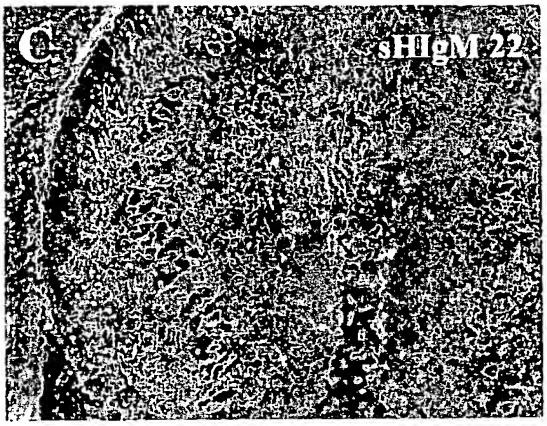


FIG. 19D

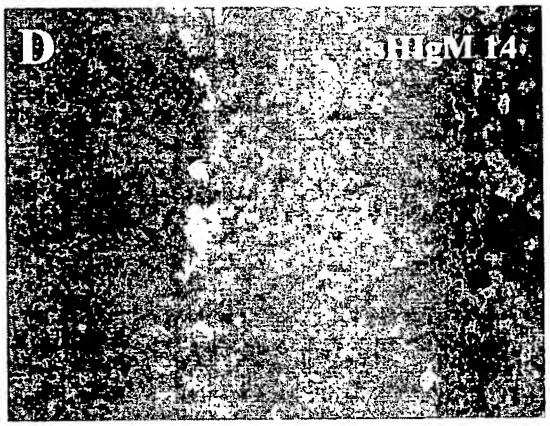


FIG. 19E

FIG. 19F

FIG. 20A

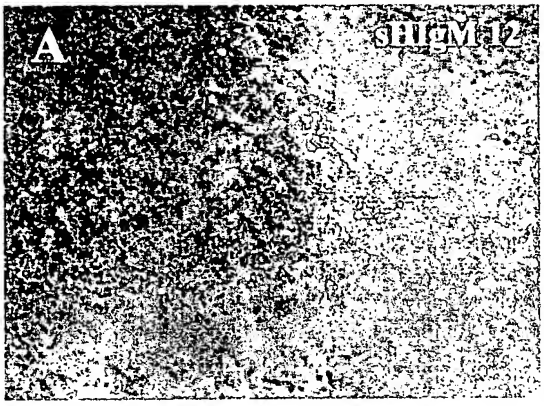


FIG. 20B

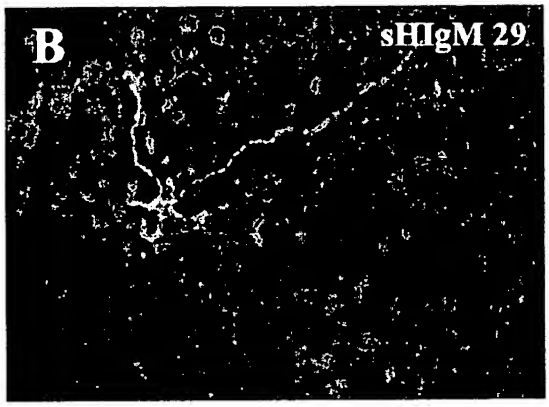


FIG. 20C

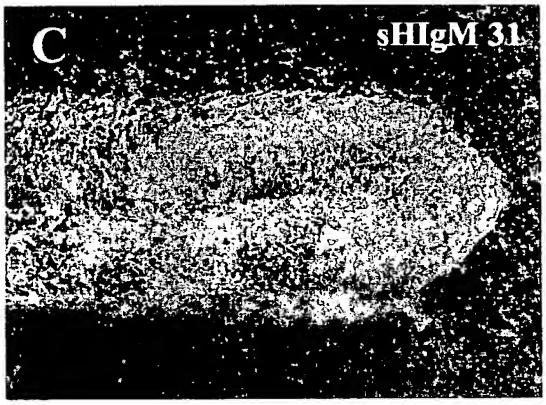


FIG. 20D

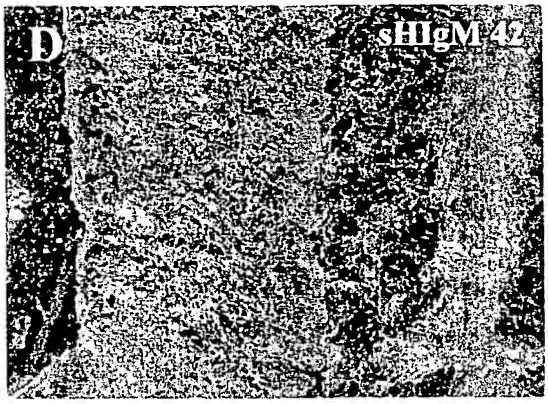


FIG. 20E

FIG. 20F

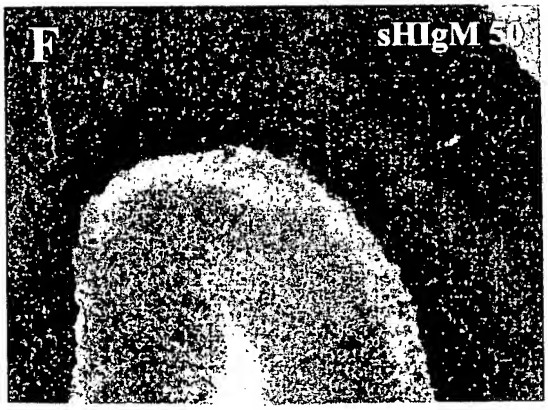


FIG. 21A

FIG. 21B

FIG. 21C

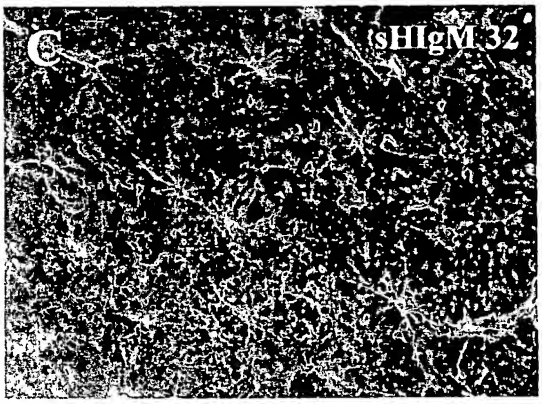


FIG. 21D

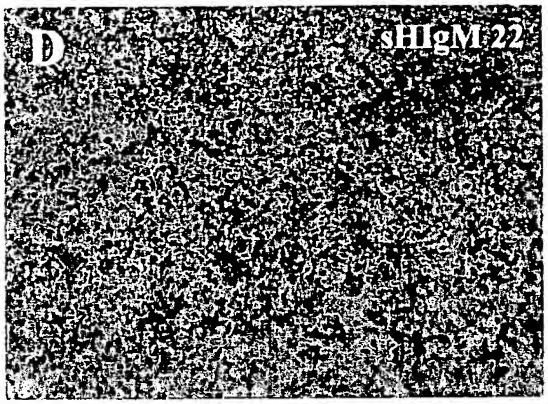


FIG. 21E

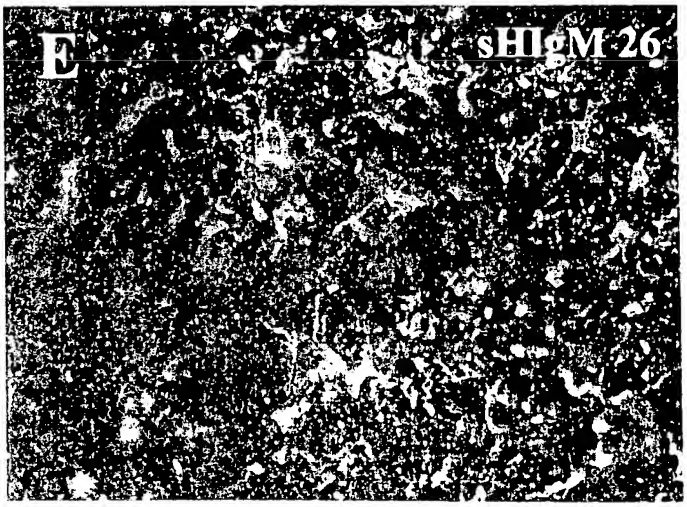


FIG. 22A

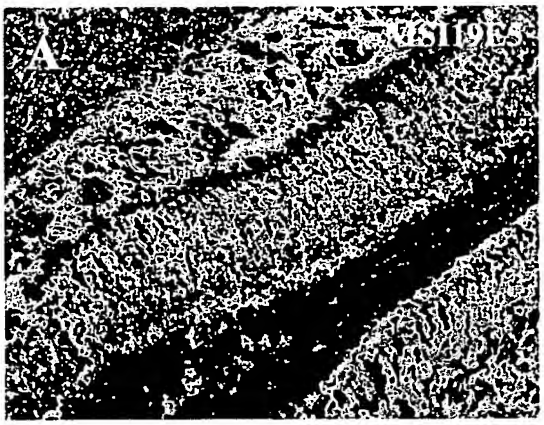


FIG. 22B

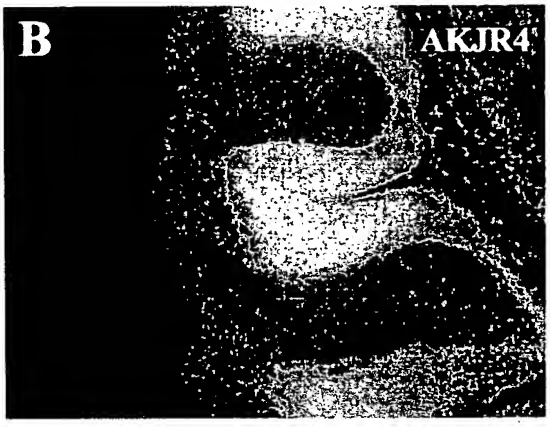


FIG. 22C

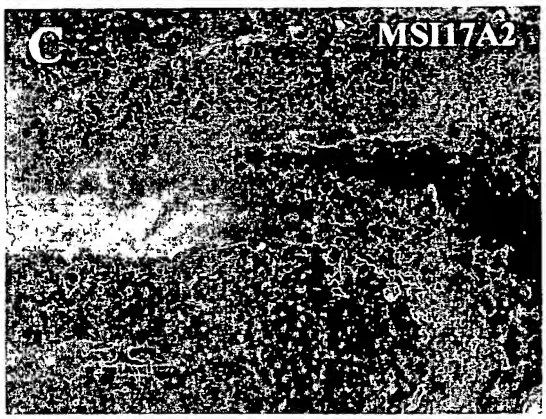


FIG. 22D

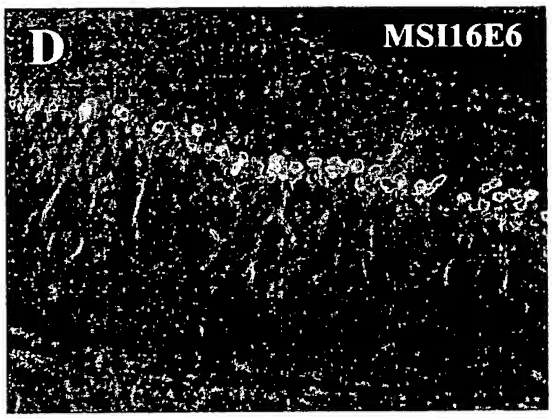


FIG. 22E

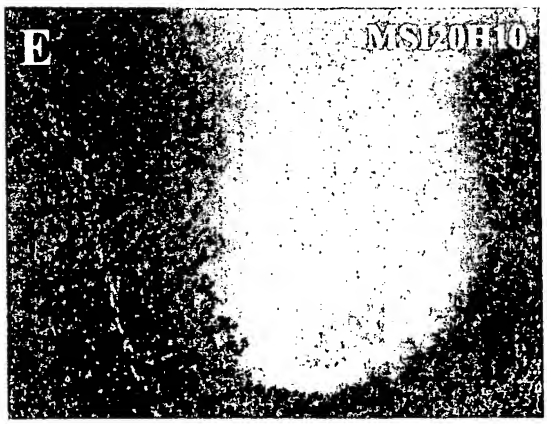


FIG. 22F

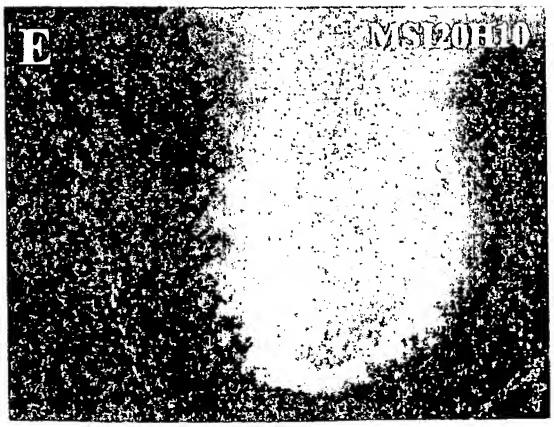


FIG. 23A

FIG. 23B

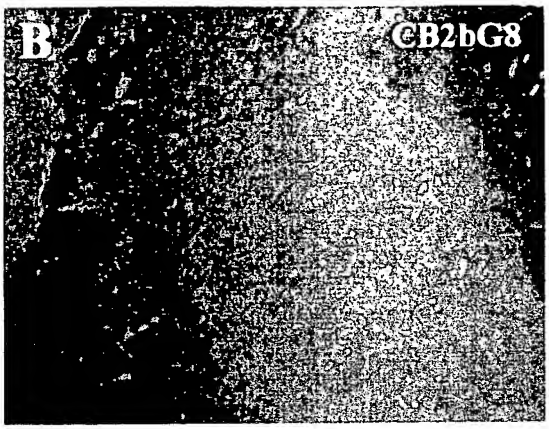


FIG. 23C

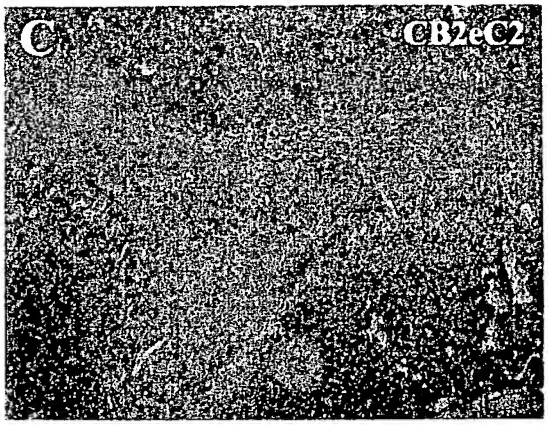


FIG. 23D

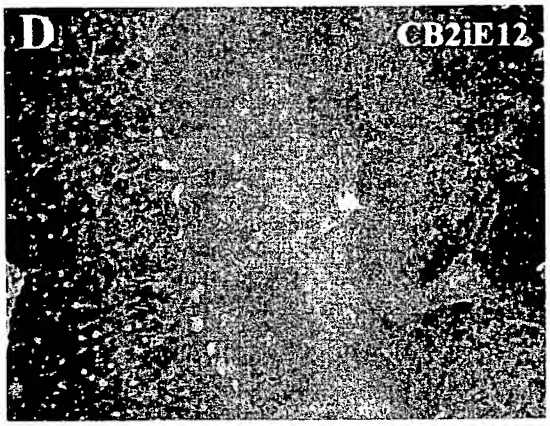


FIG. 23E

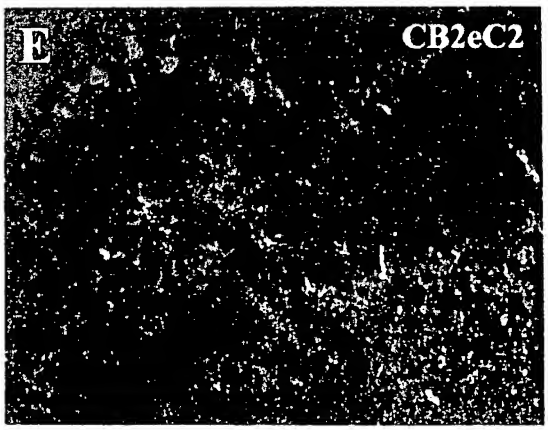


FIG. 23F

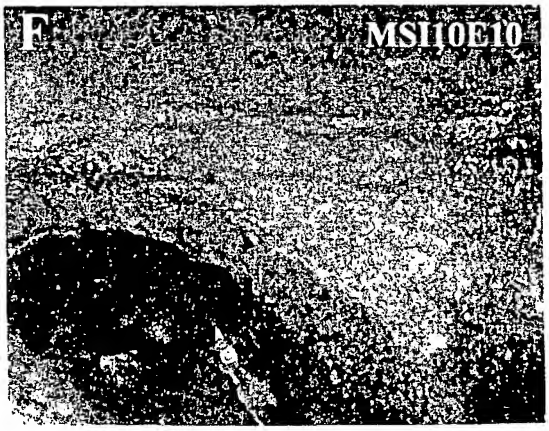
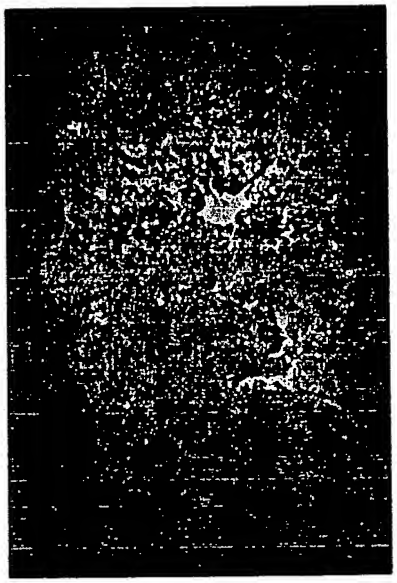
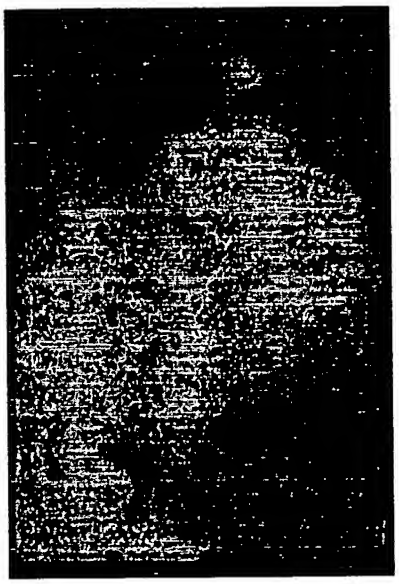


FIG. 24A



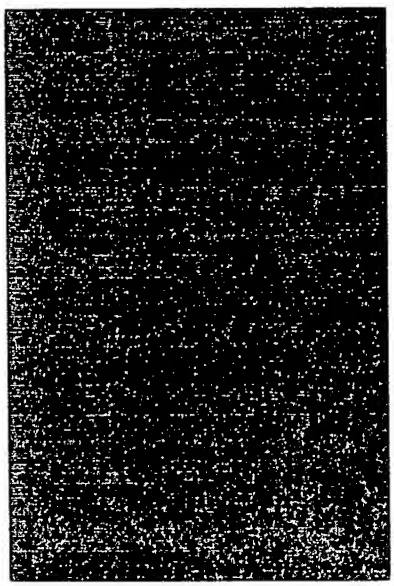
Polyclonal hIgM

FIG. 24B



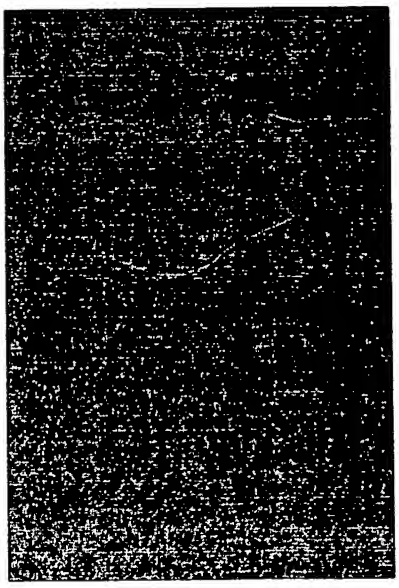
MBP+ 0L

FIG. 24C



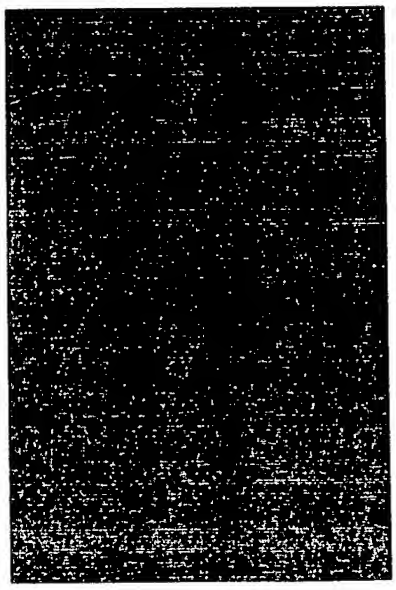
Polyclonal hIgG

FIG. 24D



sHIgM 1

FIG. 24E



sHIgM 2

FIG. 25A

FIG. 25B

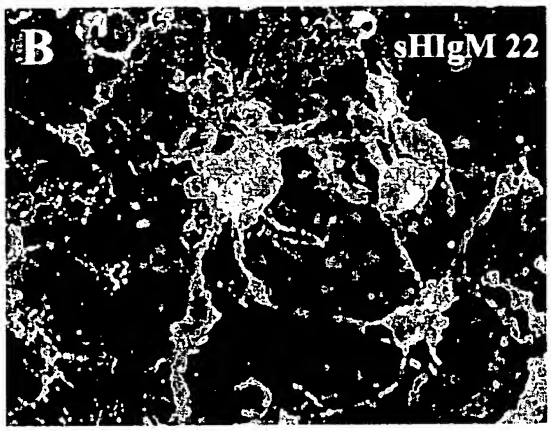


FIG. 25C

FIG. 25D

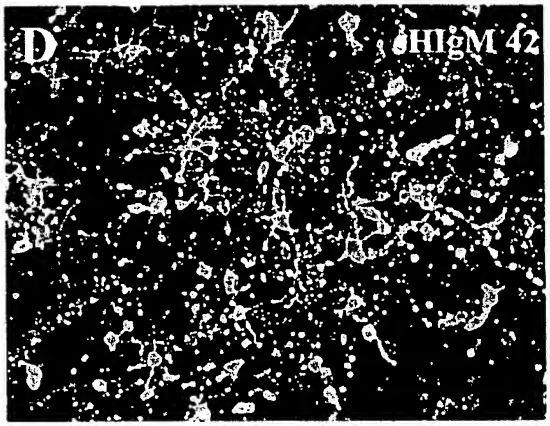


FIG. 25E

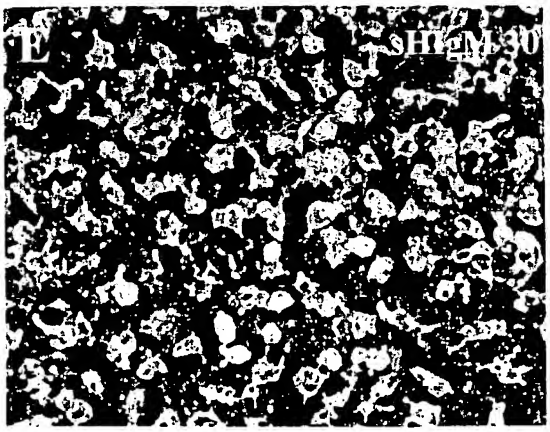


FIG. 25F

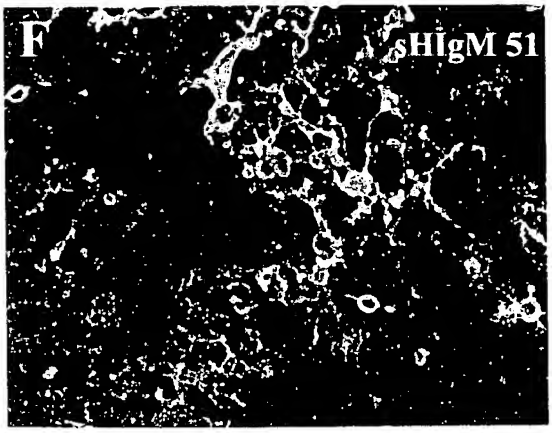


FIG. 26A

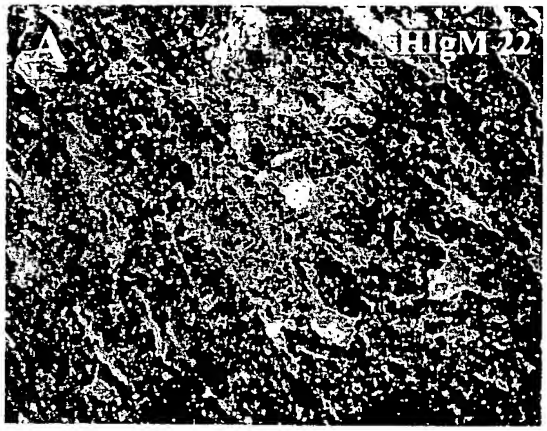


FIG. 26B

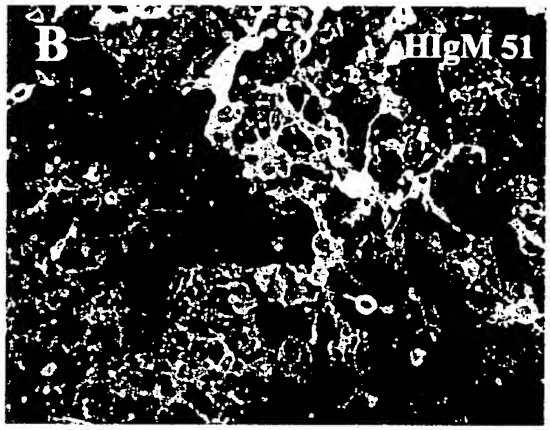


FIG. 26C

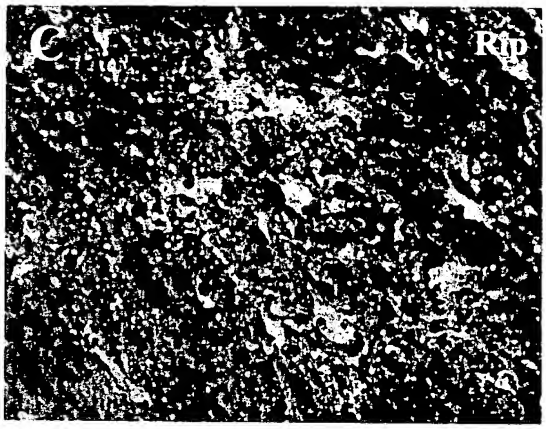


FIG. 26D

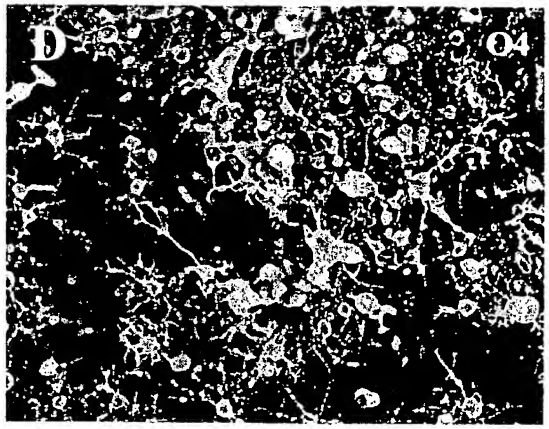


FIG. 26E

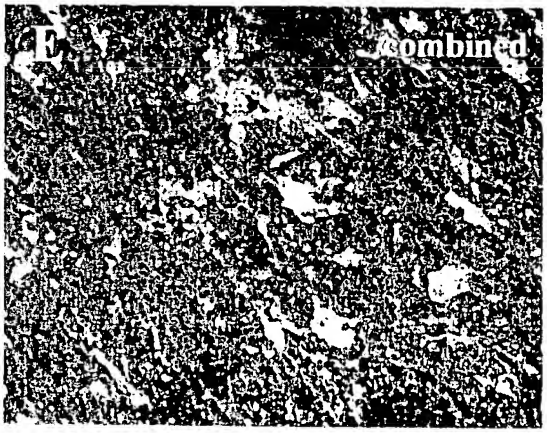


FIG. 26F

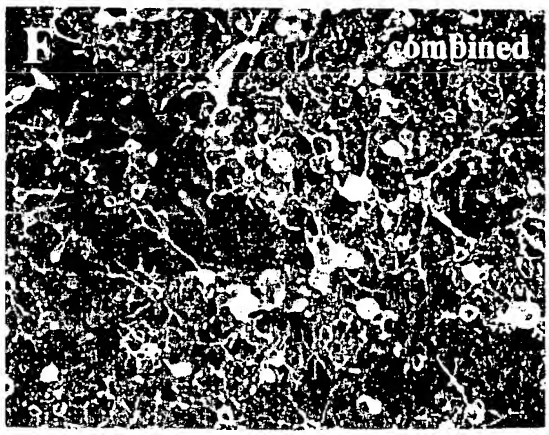


FIG. 27A

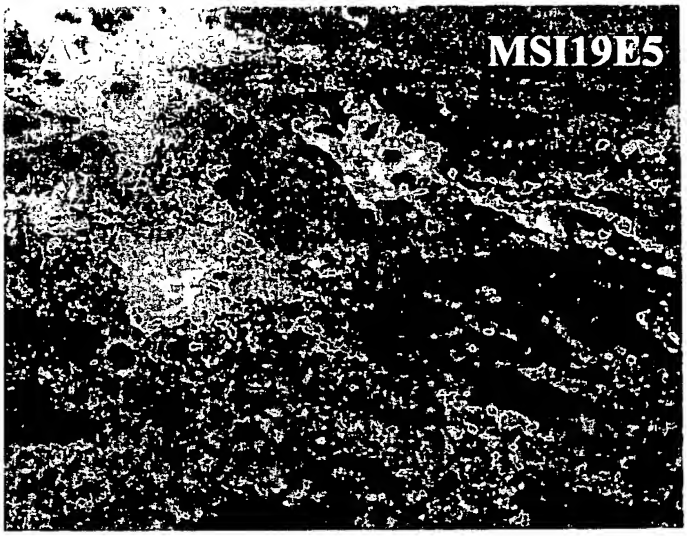


FIG. 27B

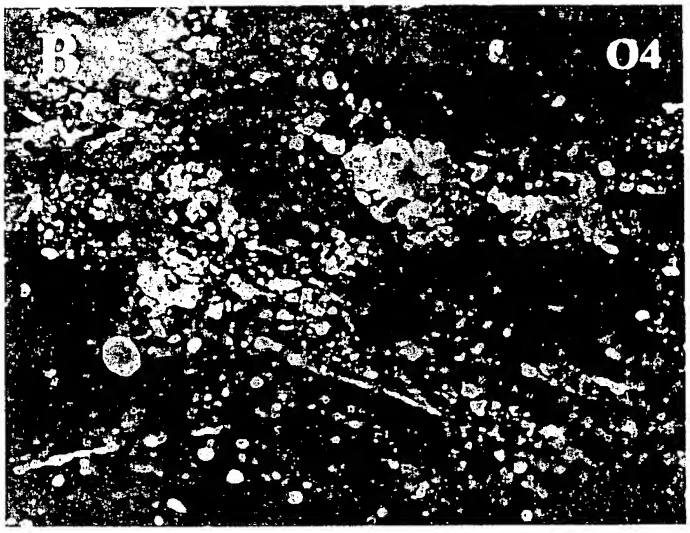


FIG. 27C

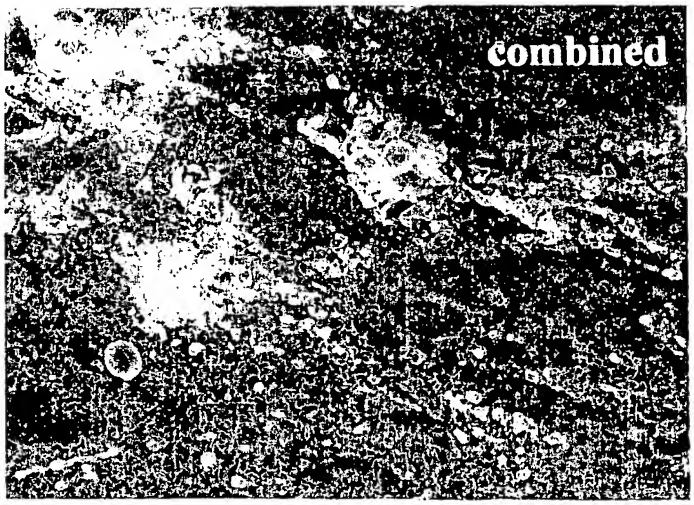


FIG. 29

ebvHlgMs Characterized by Binding to SCH via ELISA

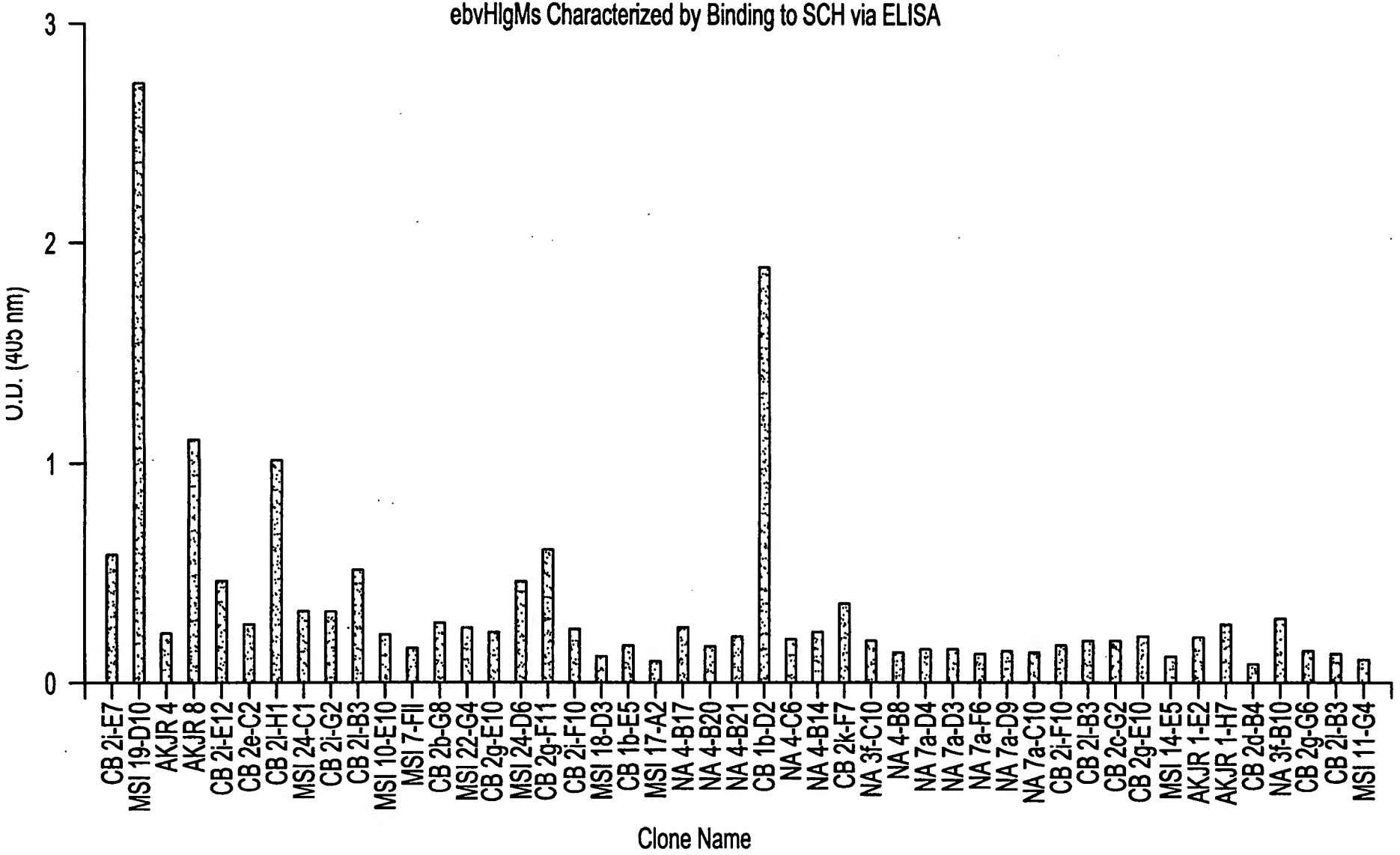


FIG. 30A

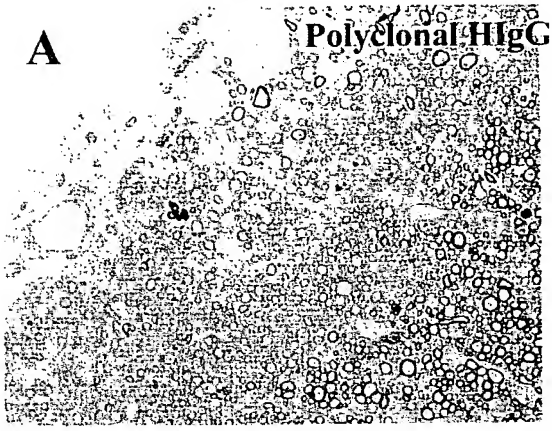


FIG. 30B

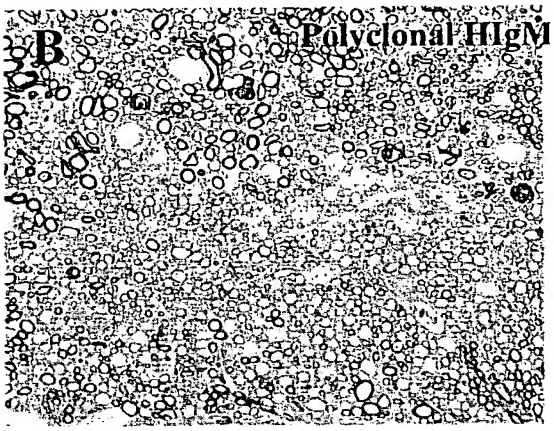


FIG. 30C

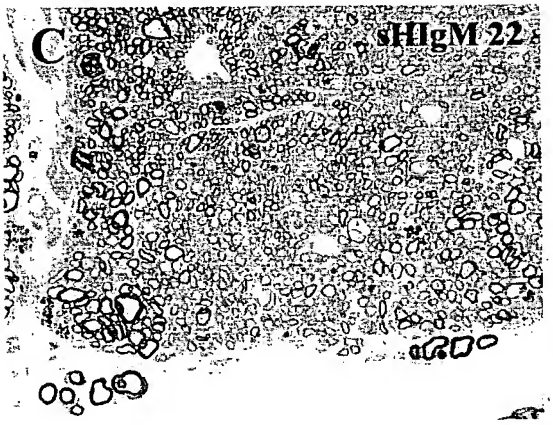


FIG. 30D

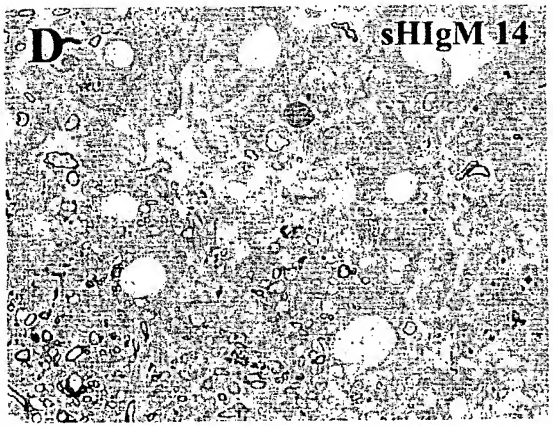


FIG. 30E

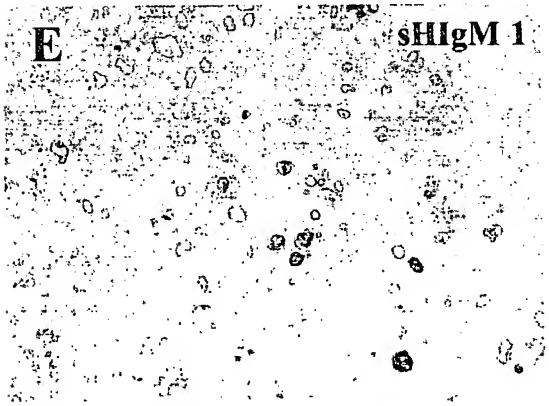


FIG. 30F

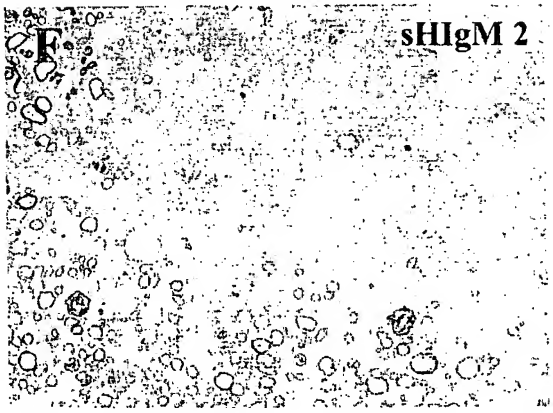


FIG. 31A

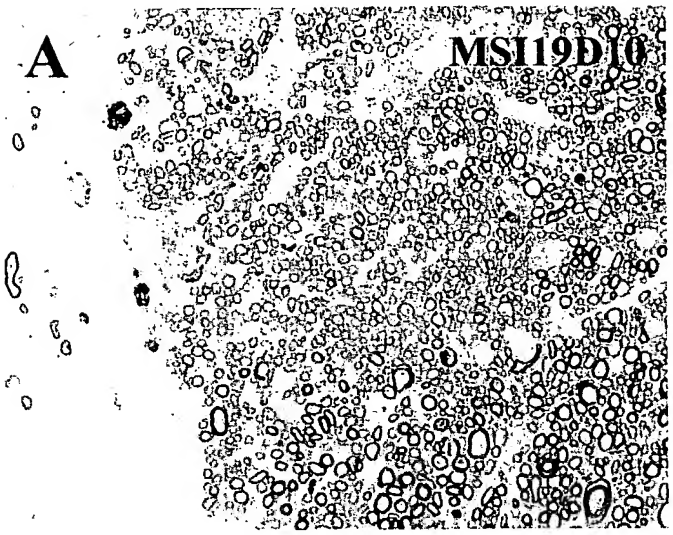


FIG. 31B

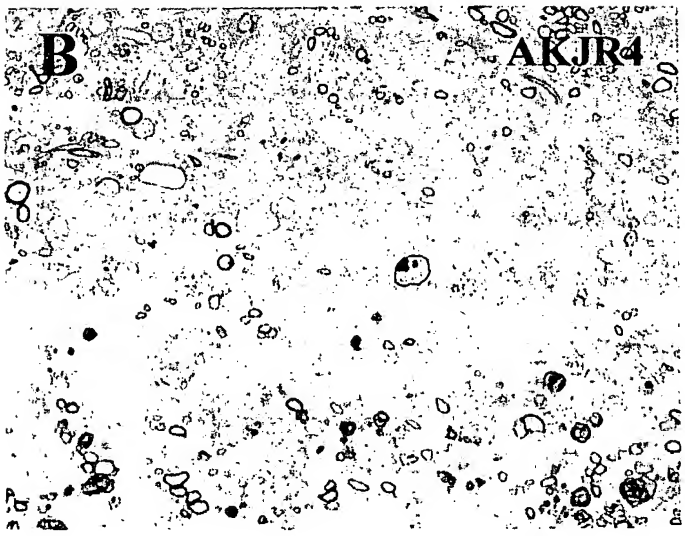
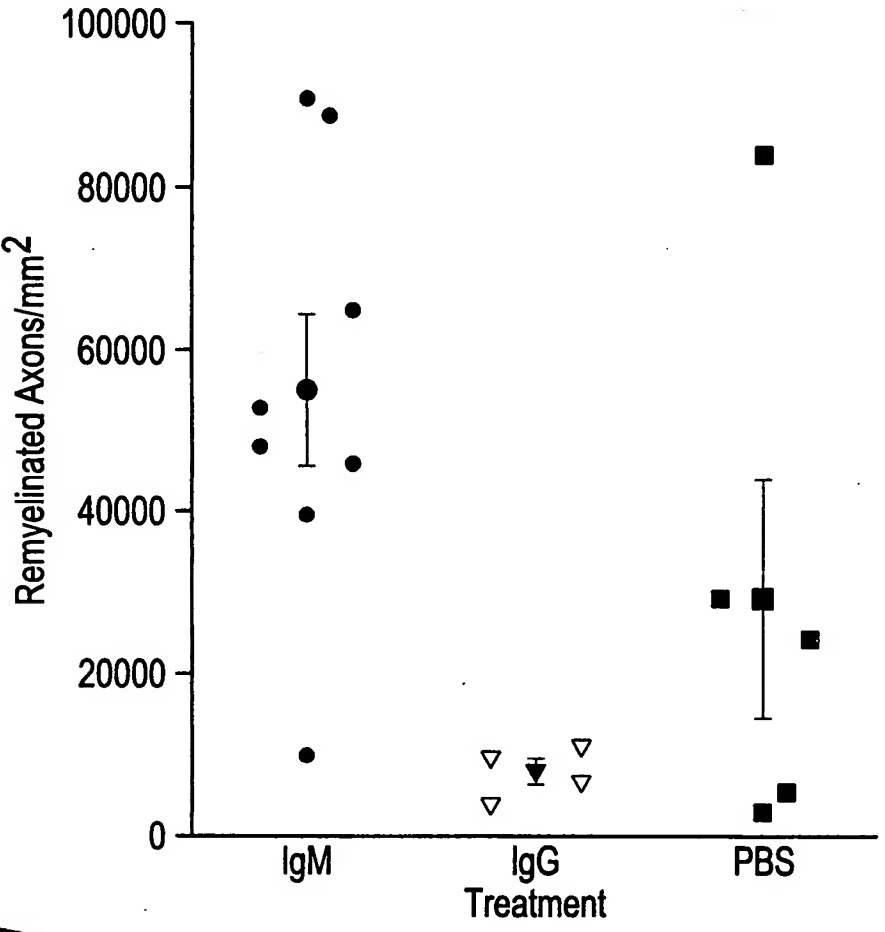


FIG. 32

Lysolecithin Experiment 21 Day Experiment



ANIMAL #	STRAIN	RX	DAY RX	Axons/mm^2
1091-98	SJL	HUMAN IGM	7	47881.04
1093-98	SJL	HUMAN IGM	7	90745.80
1094-98	SJL	HUMAN IGM	7	88638.09
1095-98	SJL	HUMAN IGM	7	52767.82
1181-98	SJL	HUMAN IGM	7	45583.42
1182-98	SJL	HUMAN IGM	7	39289.31
1183-98	SJL	HUMAN IGM	7	64636.39
1184-98	SJL	HUMAN IGM	7	9937.24
Mean				**54934.89**
SEM				**9376.95**
1135-98	SJL	HUMAN IGG	7	9433.96
1139-98	SJL	HUMAN IGG	7	3702.92
1140-98	SJL	HUMAN IGG	7	11028.19
1141-98	SJL	HUMAN IGG	7	6493.06
Mean				**7664.53**
SEM				**1620.49**
1122-98	SJL	PBS	7	2457.22
1124-98	SJL	PBS	7	23746.34
1170-98	SJL	PBS	7	83549.17
1171-98	SJL	PBS	7	4819.92
1172-98	SJL	PBS	7	28878.82
Mean				**28690.29**
SEM				**14649.14**

FIG. 33

Hapten Elisa

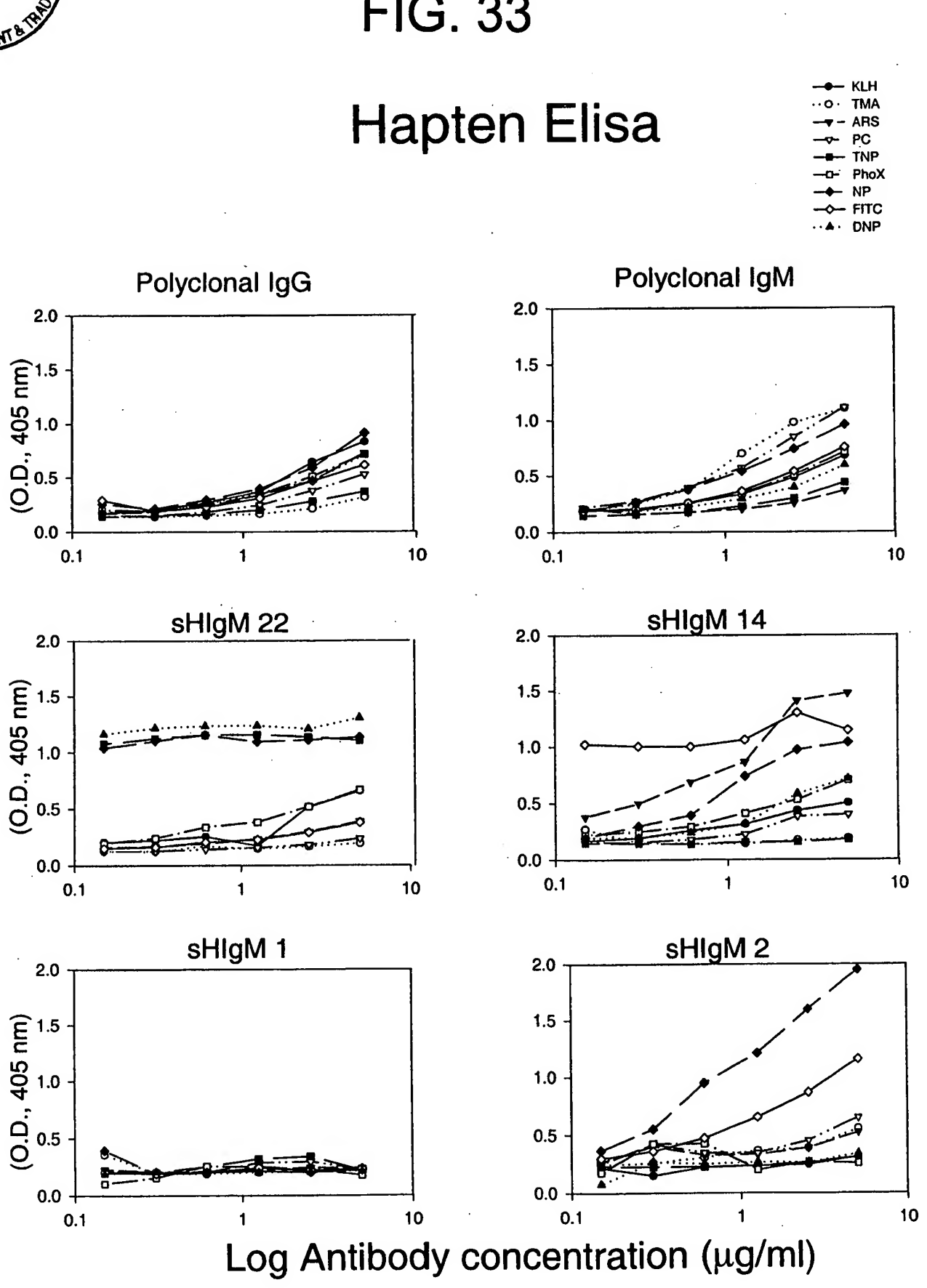


FIG. 34

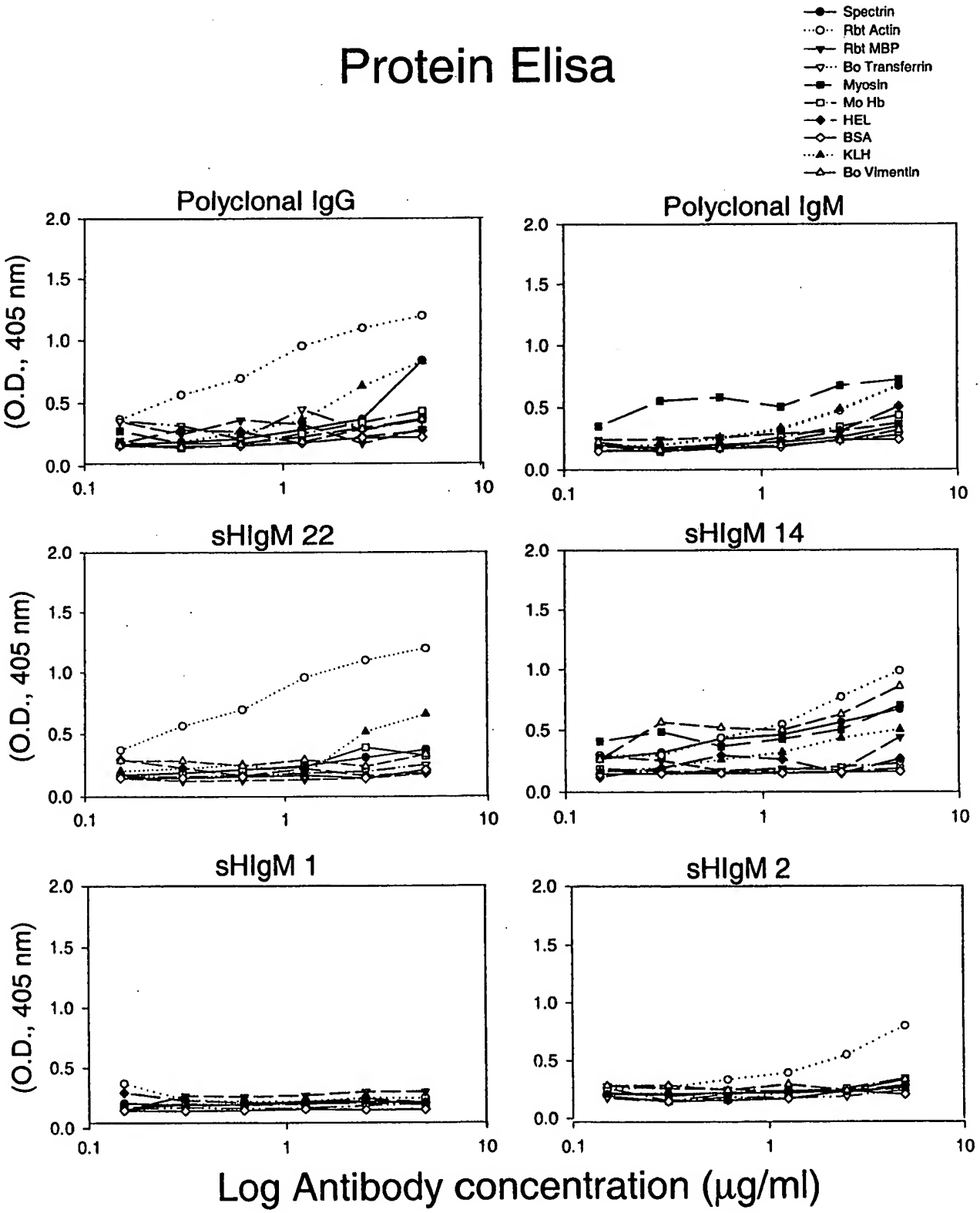


FIG. 35

```
/FR1-----------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10   11  12  13  14  15
 Q   V   Q   L   V   E   S   G   G   G   V   V   Q   P   G
CAG GTG CAG CTG GTG GAG TCT GGG GGA GGC GTG GTC CAG CCT GGG
Clone A sH-IgM.22 VH                   G
Clone B sH-IgM.22 VH
-----------------------------------------------------------------
 16  17  18  19  20  21  22  23  24  25  26  27  28  29  30
 R   S   L   R   L   S   C   A   A   S   G   F   T   F   S
AGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTC AGT


/CDR1---------------/FR2-----------------------------------------
 31  32  33  34  35  36  37  38  39  40  41  42  43  44  45
 S   S   G   M   H   W   V   R   Q   A   P   G   K   G   L
AGC TAT GGC ATG CAC TGG GTC CGC CAG GCT CCA GGC AAG GGG CTG
     C                           A
     C
---------------/CDR2-----------------------------------------
 46  47  48  49  50  51  52 52A  53  54  55  56  57  58  59
 E   W   V   A V(I)  I   S   Y   D   G   S   R   K   Y   Y
GAG TGG GTG GCA GTT ATA TCA TAT GAT GGA AGT AAT AAA TAC TAT
                        T                   GG
                  A C   T                   GG
-----------------------/FR3-----------------------------------
60  61  62  63  64  65  66  67  68  69  70  71  72  73  74
A   D   S   V   K   G   R   F   T   I   S   R   D   N   S
GCA GAC TCC GTG AAG GGC CGA TTC ACC ATC TCC AGA GAC AAT TCC
                                                    C
                                                    C
-----------------------------------------------------------------
 75  76  77  78  79  80  81  82 82A 82B 82C  83  84  85  86
 K   N   T   L   Y   L   Q   M   N   S   L   T   A D(E) D
AAG AAC ACG CTG TAT CTG CAA ATG AAC AGC CTG AGA GCT GAG GAC
          T                                 CG        C
          T   C                             C
-------------------------------/CDR3-----------------------
 87  88  89  90  91  92  93  94  95  96  97  98  99 100100A
 T   A   V   Y   Y   C   A   K   G   V   T   G   S   P   T
ACG GCT GTG TAT TAC TGT GCG AAA GAG GTG ACT GCT ATT CCC TAC
                    T               GA          G   G   G ACG
                                    GA          G   G   G ACG
-----------/FR4-------------------------------------------
100B101 102 103 104 105 106 107 108 109 110 111 112 113
 L   D   Y   W   G   Q   G   T   L   V   T   V   S   S
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA
C                                                   G
C                                                   G
```

FIG. 36

```
/FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9   11  12  13  14  15  16
 Q   S   V   L   T   Q   P   P   S   V   S   A   A   P   G
CAG TCT GTG TTG ACG CAG CCG CCC TCA GTG TCT GCG GCC CCA GGA
Clone I sH-IgM.22 Vλ     G       T               T
Clone II sH-IgM.22 Vλ    G       T               T
-------------------------/CDR1-------------------------
 17  18  19  20  21  22  23  24  25  26  27 27A 27B  28  29
 Q   K   V   T   I   S   C   S   G   S   S   S   N   I   G
CAG AAG GTC ACC ATC TCC TGC TCT GGA AGC AGC TCC AAC ATT GGG
                                                      C
                                                      C
------------------/FR2-----------------------------------
 30  31  32  33  34  35  36  37  38  39  40  41  42  43  44
 N   N   F   V   S   W   Y   Q   Q   L   P   G   T   A   P
AAT AAT TAT GTA TCC TGG TAC CAG CAG CTC CCA GGA ACA GCC CCC
        T                   A
        T                   A
------------------/CDR2-----------------------/FR3-------
 45  46  47  48  49  50  51  52  53  54  55  56  57  58  59
R(K) L   L   I   Y   D   I   T   K   R   P   S   G   I   P
AAA CTC CTC ATT TAT GAC AAT AAT AAG CGA CCC TCA GGG ATT CCT
 G                     T   C
                       T   C
-------------------------------------------------------------
 60  61  62  63  64  65  66  67  68  69  70  71  72  73  74
 D   R   F   S   G   S   K   S   G   T   S   A   T   L   G
GAC CGA TTC TCT GGC TCC AAG TCT GGC ACG TCA GCC ACC CTG GGC


-------------------------------------------------------/CDR3
 75  76  77  78  79  80  81  82  83  84  85  86  87  88  89
 I   T   G   L   Q   T   G   D   E   A   D   Y   Y   C  G(E)
ATC ACC GGA CTC CAG ACT GGG GAC GAG GCC GAT TAT TAC TGC GGA
                                                      A
-----------------------------------------/FR4----------------
 90  91  92  93  94  95 95A 95B  96  97  98  99 100 101 102
 T   W   D   S   S   L   S   A   V   V   F   G   G   G   T
ACA TGG GAT AGC AGC CTG ... ..T GTG GTA TTC GGC GGA GGG ACC
                        AGT GC                  G
                        AGT GC                  G
-----------------------/Cλ----------
103 104 105 106 106A107 108 109 110
 K   L   T   V   L   G   Q   P   K
AAG CTG ACC GTC CTA GGT CAG CCC AAG
```

FIG. 37

Sequence of MSI 19-D10 V_H

```
FR1-------------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16
CAG GTG CAG CTG CAG GAG TCG GGC CCA GGA CTG GTG AAG CCT TCG GAG
 Q   V   Q   L   Q   E   S   G   P   G   L   V   K   P   S   E

-----------------------------------------------------------/CDR1
17  18  19  20  21  22  23  24  25  26  27  28  29  30  31
ACC CTG TCC CTC ACC TGC ACT GTC TCT GGT GGC TCC ATC AGT AGT
 T   L   S   L   T   C   T   V   S   G   G   S   I   S   S

---------------/FR2-----------------------------------------
32  33  34  35  36  37  38  39  40  41  42  43  44  45  46
TAC TAC TGG AGC TGG ATC CGG CAG CCC CCA GGG AAG GGA CTG GAG
 Y   Y   W   S   W   I   R   Q   P   P   G   K   G   L   E

-----------/CDR2------------------------------------------------
47  48  49  50  51  52  53  54  55  56  57  58  59  60  61
TGG ATT GGG TAT ATC TAT TAC AGT GGG AGC ACC AAC TAC AAC CCC
 W   I   G   Y   I   Y   Y   S   G   S   T   N   Y   N   P

---------------/FR3-----------------------------------------
62  63  64  65  66  67  68  69  70  71  72  73  74  75  76
TCC CTC AAG AGT CGA GTC ACC ATA TCA GTA GAC ACG TCC AAG AAC
 S   L   K   S   R   V   T   I   S   V   D   T   S   K   N

-------------------------------------------------------------------
77  78  79  80  81  82  82A 82B 82C 83  84  85  86  87  88
CAG TTC TCC CTG AAG CTG AGC TCT GTG ACC GCT GCG GAC ACG GCC
 Q   F   S   L   K   L   S   S   V   T   A   A   D   T   A

----------------------/CDR3-----------------------------------
89  90  91  92  93  94  95  96  97  98  99  100 100A100B100C
GTG TAT TAC TGT GCG AGG TCG GCA CAG CAG CAG CTG GTA TAC TAC
 V   Y   Y   C   A   R   S   A   Q   Q   Q   L   V   Y   Y

-----------/FR4-----------------------------------------/Cμ-
100D 101 102 103 104 105 106 107 108 109 110 111 112 113 114
TTT GAC TAC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA GGG
 F   D   Y   W   G   Q   G   T   L   V   T   V   S   S   G
```

FIG. 38

Sequence of MSI 19-D10 Vκ

```
FR 1----------------------------------------------------------
 1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
GAC ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG
 D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L

------------------------------/CDR1-----------------------
16  17  18  19  20  21  22  23  24  25  26  27  27A 27B 27C
GGC GAG AGG GCC ACC ATC AAC TGC AAG TCC AGC CAG AGT GTT TTA
 G   E   R   A   T   I   N   C   K   S   S   Q   S   V   L

-------------------------------------------/FR2------------
27D 27E 27F 28  29  30  31  32  33  34  35  36  37  38
TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG
 Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q

-----------------------------------------/CDR2----------
39  40  41  42  43  44  45  46  47  48  49  50  51  52  53
AAA CCA GGA CAG CCT CCT AAG CTG CTC ATT TAC TGG GCA TCT ACC
 K   P   G   Q   P   P   K   L   L   I   Y   W   A   S   T

-----------/FR3-----------------------------------------------
54  55  56  57  58  59  60  61  62  63  64  65  66  67  68
CGG GAA TCC GGG GTC CCT GAC CGA TTC AGT GGC AGC GGG TCT GGG
 R   E   S   G   V   P   D   R   F   S   G   S   G   S   G

----------------------------------------------------------------
69  70  71  72  73  74  75  76  77  78  79  80  81  82  83
ACA GAT TTC ACT CTC ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG
 T   D   F   T   L   T   I   S   S   L   Q   A   E   D   V

----------------------/CDR3---------------------------/FR4
84  85  86  87  88  89  90  91  92  93  94  95  96  97  98
GCA GTT TAT TAC TGT CAG CAA TAT TAT AGT ACT CCT CTC ACT TTC
 A   V   Y   Y   C   Q   Q   Y   Y   S   T   P   L   T   F

-----------------------------------/Cκ----------------------
99  100 101 102 103 104 105 106 107 108 109 110 111 112 113
GGC CCT GGG ACC AAA GTG GAT ATC AAA CGA ACT GTG GCT GCA CCA
```

FIG. 39A

Mixed Primary Glia
sH-IgM.22 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ sH-IgM.22 (3μg/ml)
▲ Br-A23187 (10μM)

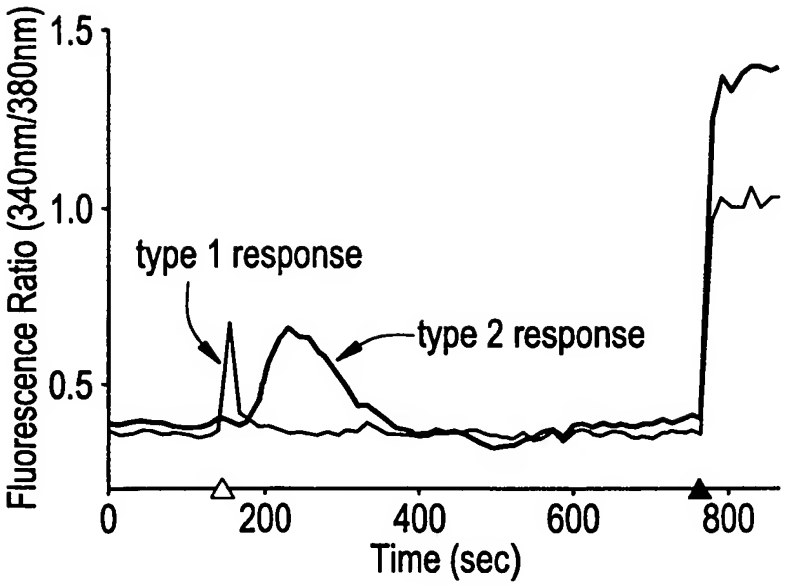


FIG. 39B

Mixed Primary Glia
SCH 94.03 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ SCH 94.03 (3μg/ml)
▲ Br-A23187 (10μM)

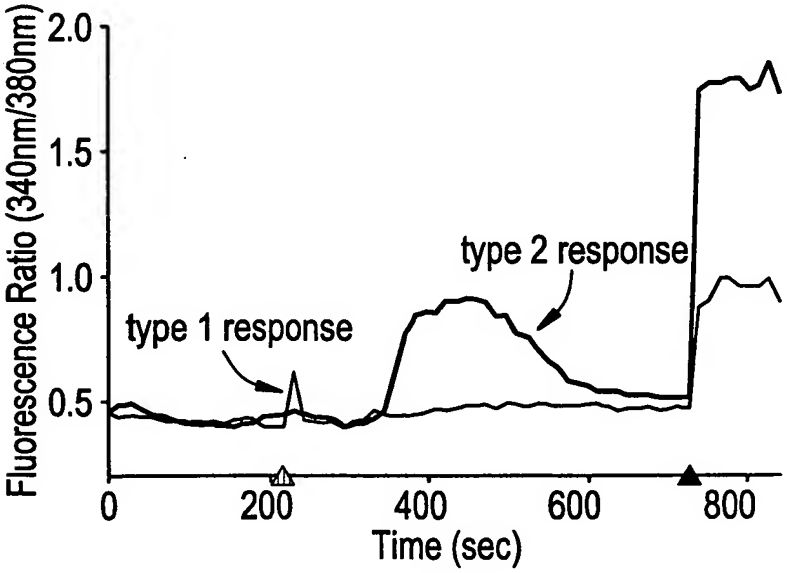


FIG. 39C

Mixed Primary Glia
CH 12/sH-IgM.14 Ca^{2+} response

— ratio cell #1
— ratio cell #2
△ CH 12 (3μg/ml)
△ sH-IgM.14 (3μg/ml)
▲ Br-A23187 (10μM)

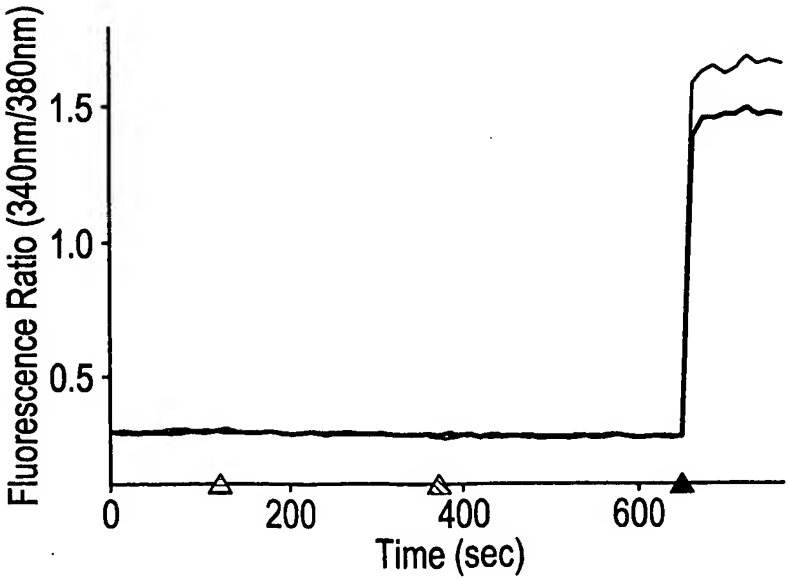


FIG. 40A

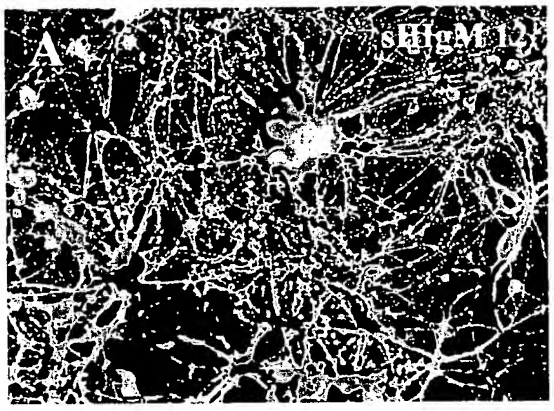


FIG. 40B

FIG. 41

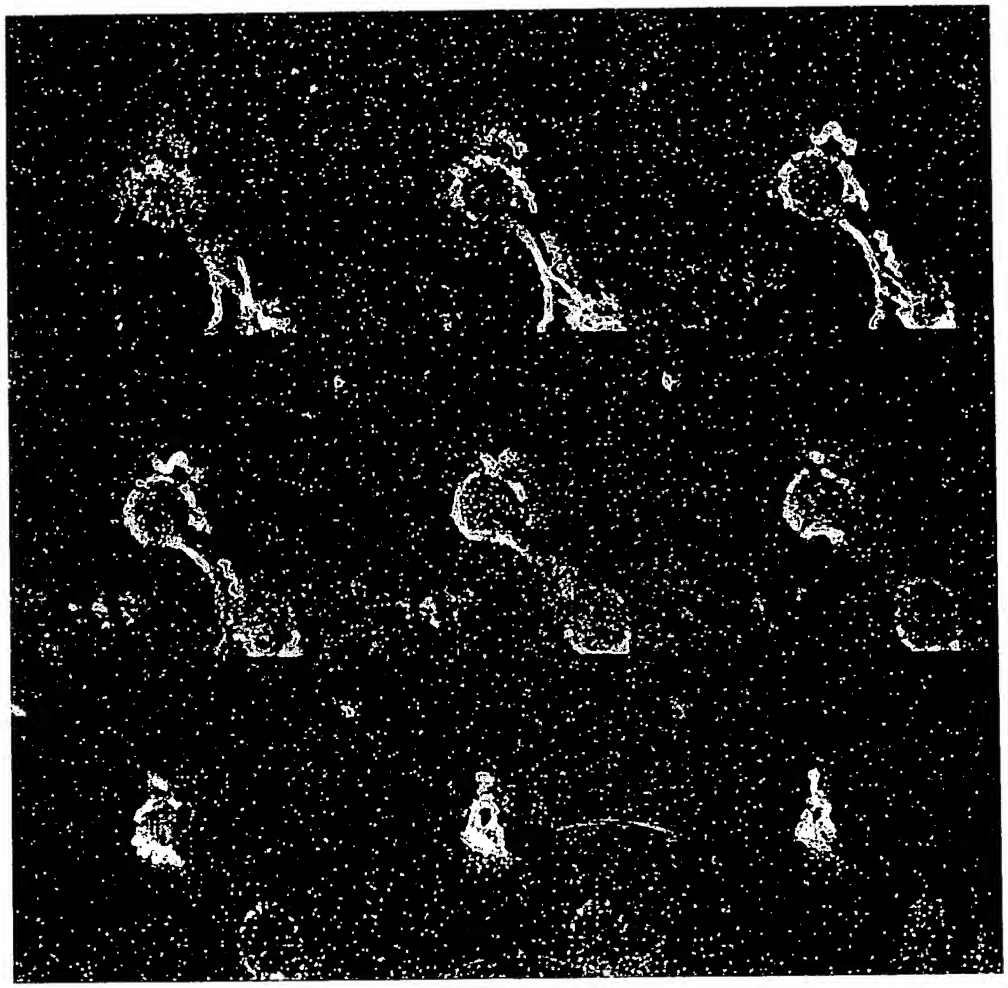


FIG. 42A

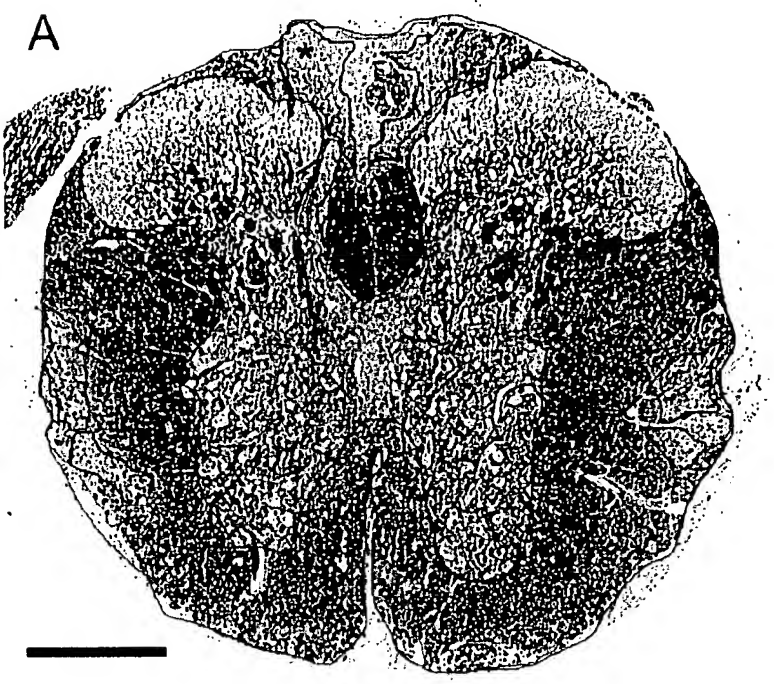


FIG. 42B

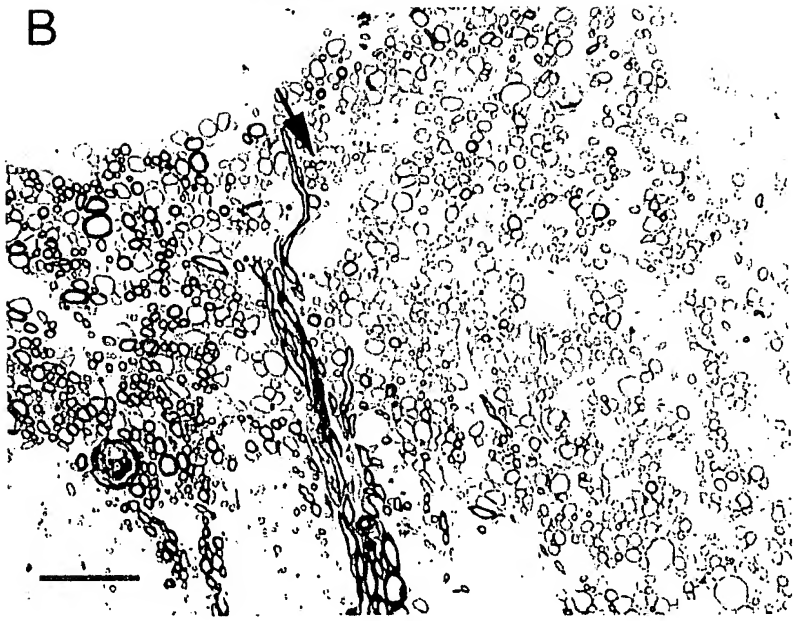


FIG. 43A

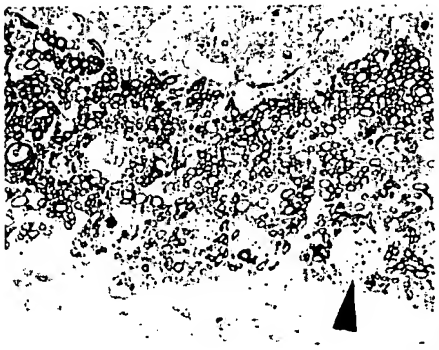


FIG. 43B

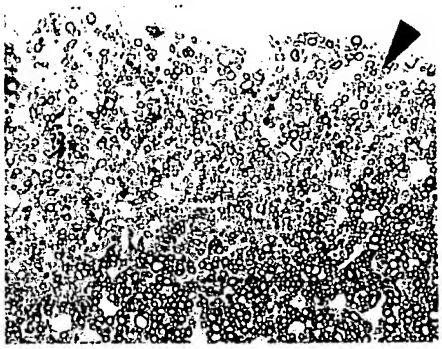


FIG. 43C

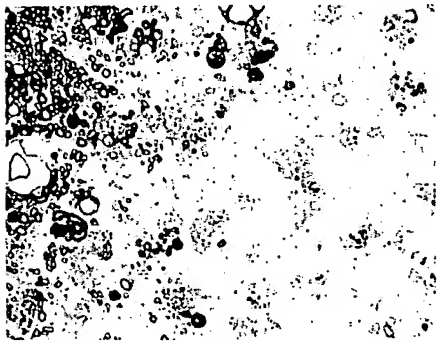


FIG. 43D

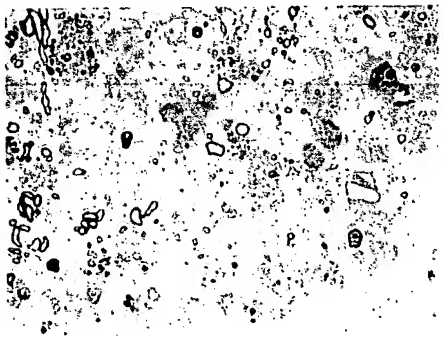


FIG. 43E

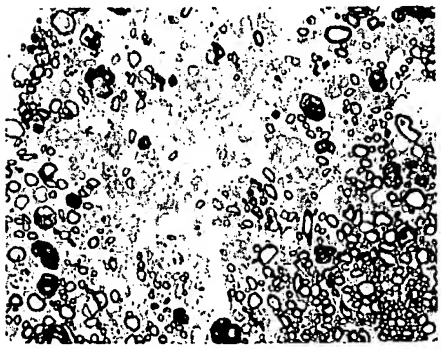


FIG. 43F

FIG. 43G

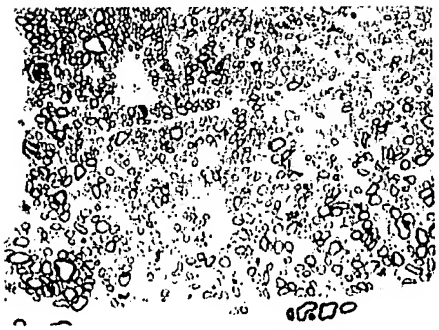


FIG. 43H

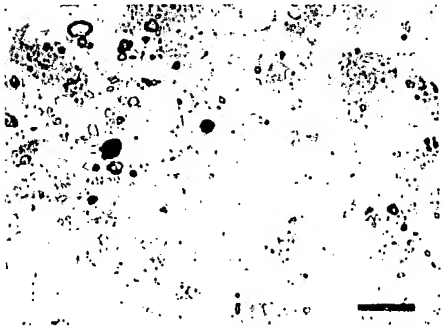


FIG. 44A

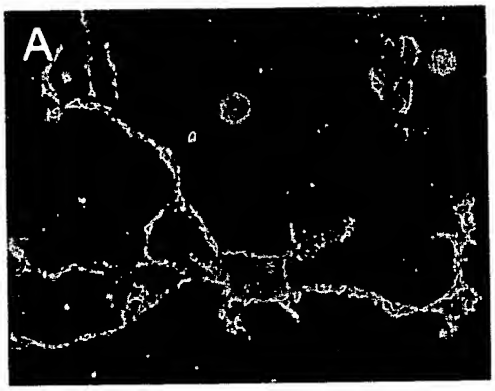


FIG. 44B

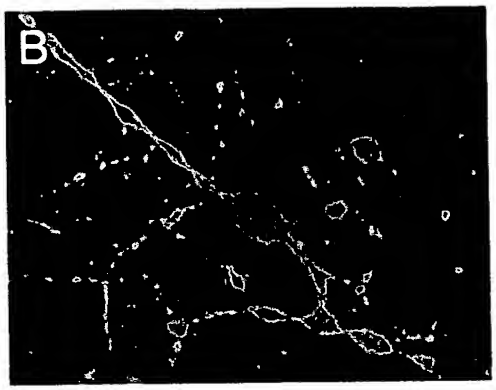


FIG. 44C

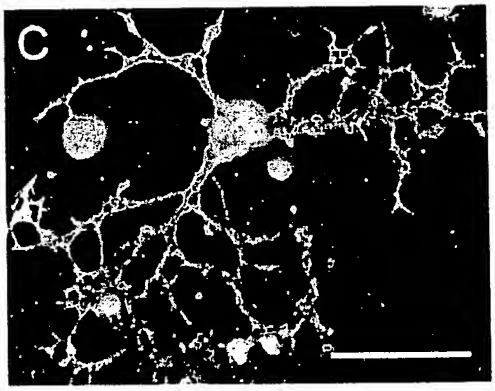


FIG. 44D

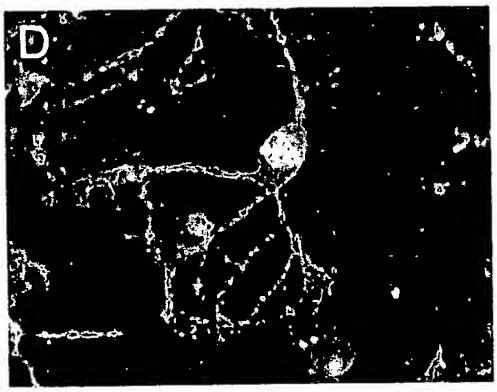


FIG. 45

Translation of CB2b-G8 V_H:

```
<---------------------- F   R   1   -   I   M   G   T --------------------------------

1               5               10          15                  20
                                x       A   V   V   Q   P   G   R   S   L   R   L   S
... ... ... ... ... ... ... ... .AG ... GCC GTG GTC CAG CCT GGG AGG TCC CTG AGA CTC TCC

-------------->                                         <-------------------
                ___________________ CDR1 - IMGT _______________
        25              30              35              40
C   A   A   S   G   F   I   F   S   S   Y   G                   M   H   W   V   R   Q
TGT GCA GCG TCT GGA TTC ATT TTC AGT AGC TAT GGC ... ... ... ... ATG CAC TGG GTC CGC CAG

F   R   2   -   I   M   G   T  ---------->                                       <---
                                           ____________ CDR2 - IMGT _____________
45                  50                  55                  60                  65
V   P   G   K   G   L   E   W   V   A   V   I   W   Y   D   G   S   D   K           Y
GTT CCA GGC AAG GGG CTG GAG TGG GTG GCA GTT ATA TGG TAT GAT GGA AGT GAT AAA ... ... TAC

------------------------------------------------       F   R   3   -   I   M   G   T ----
            70                  75                  80                  85
Y   V   D   S   V   K       G   R   F   T   I   S   R   D   N   S   K   N   T   L   Y
TAT GTA GAC TCC GTG AAG ... GGC CGA TTC ACC ATC TCC AGA GAC AAT TCT AAA AAC ACG CTC TAT

--------------------------------------------------------------->  ________________________
    90                  95                  100                 105                 110
L   Q   M   N   S   L   R   A   E   D   T   A   V   Y   Y   C   A   R   D   R   S   S
CTG CAA ATG AAC AGC CTG AGA GCC GAG GAC ACG GCT GTG TAT TAC TGT GCG AGA GAT CGC AGC AGT

CDR3 - IMGT ____________________
                            115                 120                 125
G   W   Y   W   S   C   D   S   W   G   Q   G   T   L   V   I   V   S   S
GGC TGG TAC TGG TCC TGC GAC TCC TGG GGC CAG GGA ACC CTG GTC ATT GTC TCC TCA
```

FIG. 46

Translation of CB2b-G8 V_λ

```
<---------------------- F   R   1   -   I   M   G   T --------------------------------

1               5                   10                  15                  20
                  x   x   L       L   S   G   S   P   G   Q   S   I   T   I   S
... ... ... ... ... ... .TT XGC CTC ... CTG TCT GGG TCT CCT GGA CAG TCG ATC ACC ATC TCC

--------------->                                                  <-------------------
                _____________________ CDR1 - IMGT _________________
          25                  30                  35                  40
 C   T   G   T   S   S   D   V   G   G   Y   N   Y               V   S   W   Y   Q   Q
CTG ACT GGA ACC AGC AGT GAC GTT GGT GGT TAT AAC TAT ... ... ... GTC TCC TGG TAC CAA CAG

F   R   2   -   I   M   G   T ---------->                                          <---
                                          _____________ CDR2 - IMGT _______________
 45                  50                  55                  60                  65
 H   P   G   K   A   P   K   L   M   I   Y   D   V   S                           D
CAC CCA GGC AAA GCC CCC AAA CTC ATG ATT TAT GAT GTC AGT ... ... ... ... ... ... ... GAT

-------------------------------------------------     F   R   3   -   I   M   G   T ----
 70                  75                  80                  85
 R   P   S   G   V   S       N   R   F   S   G   S   K           S   G   N   T   A   S
CGG CCC TCA GGG GTT TCT ... AAT CGC TTC TCT GGC TCC AAG ... ... TCT GGC AAC ACG GCC TCC

------------------------------------------------------------->
                                                          _____________CDR3 - IMGT
    90                  95                  100                 105                 110
 L   T   I   S   G   L   Q   A   E   D   E   A   D   Y   Y   C   S   S   Y   T   S   S
CTG ACC ATC TCT GGG CTC CAG GCT GAG GAC GAG GCT GAT TAT TAC TGC AGC TCA TAT ACA AGC AGC

                ____________________
                                   115                 120                 125
130
 S   S   V   V   F   G   G   G   T   K   L   T   V   L   G   Q   P   K   A   A   P   S
AGC TCT GTG GTA TTC GGC GGA GGG ACC AAG CTG ACC GTC CTA GGT CAG CCC AAG GCT GCC CCC TCG


 V   T   L   F   P   P   P   x
GTC ACT CTG TTC CCG CCT CCA AXG G
```

FIG. 47A

DHFR amplification of 94.03κ

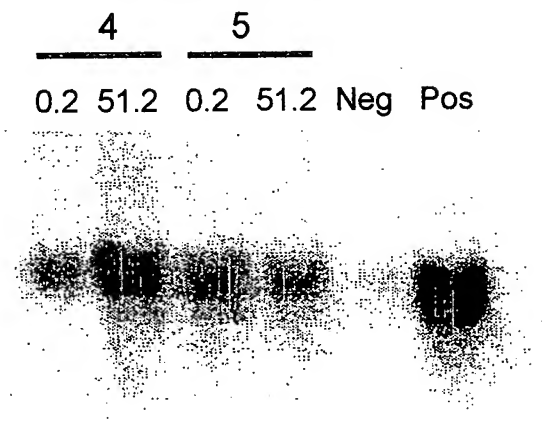


FIG. 47B

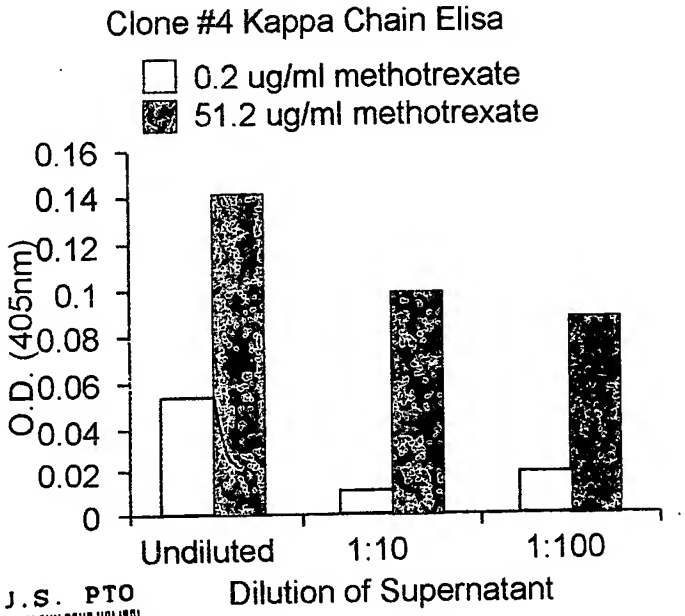


FIG. 47C

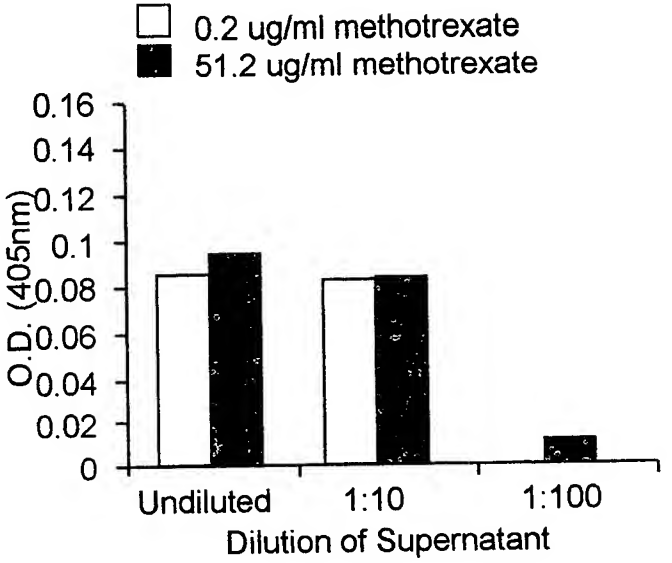


FIG. 49A

Mouse 94.03

FIG. 49B

Humanized 94.03
clone 1

FIG. 49C

Humanized 94.03
clone 2

FIG. 50A

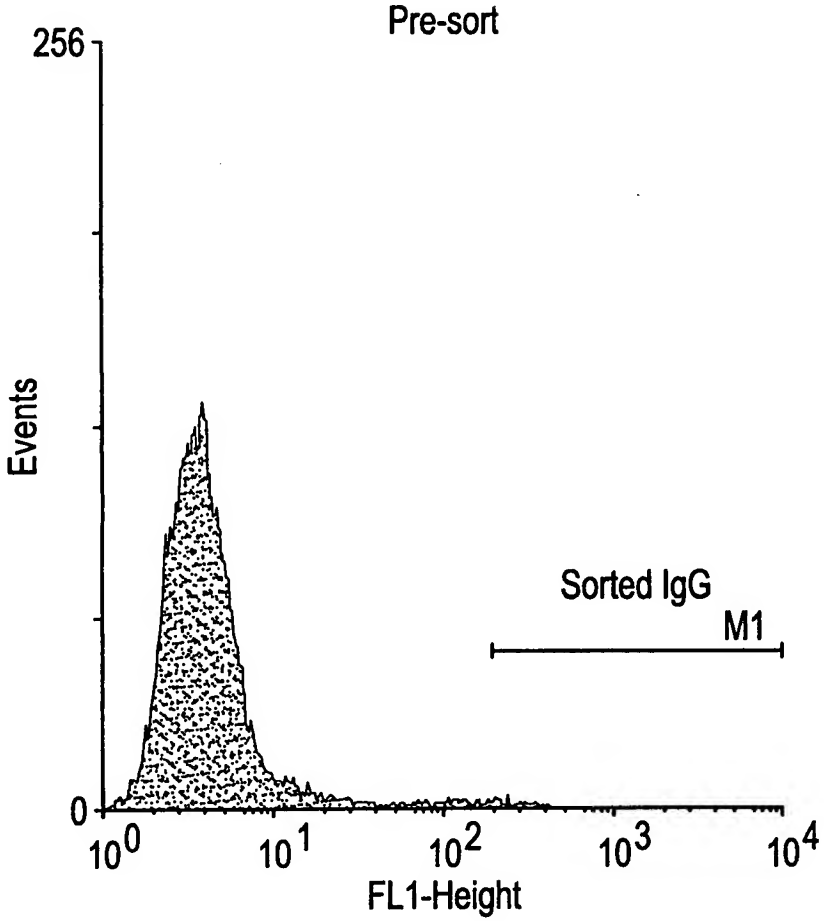


FIG. 50B

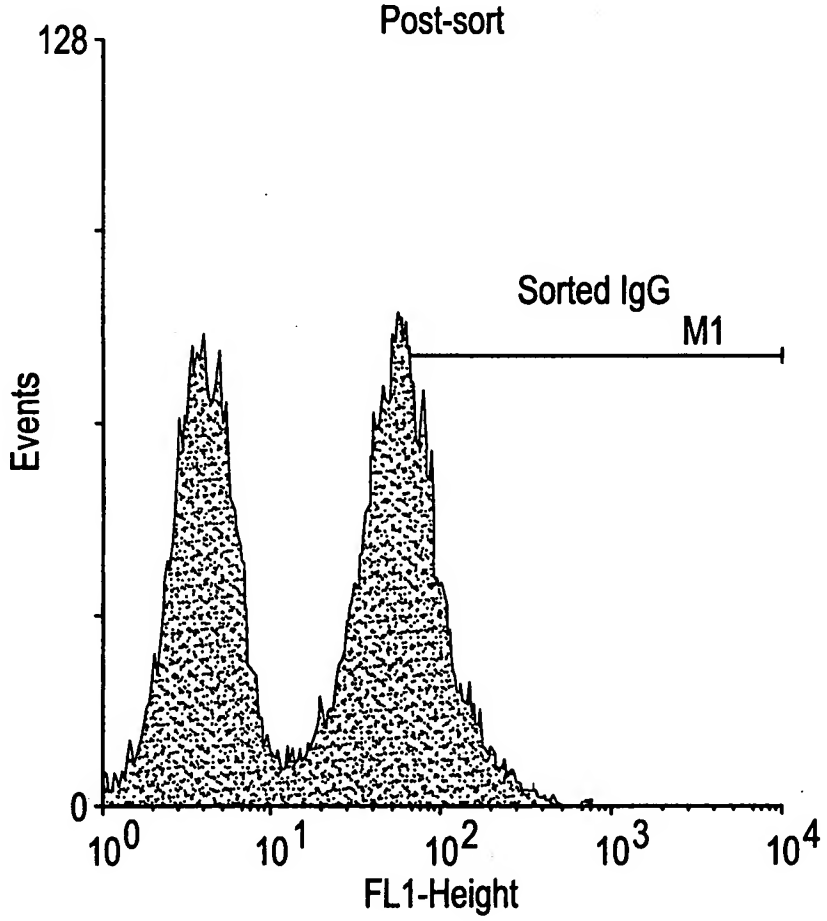
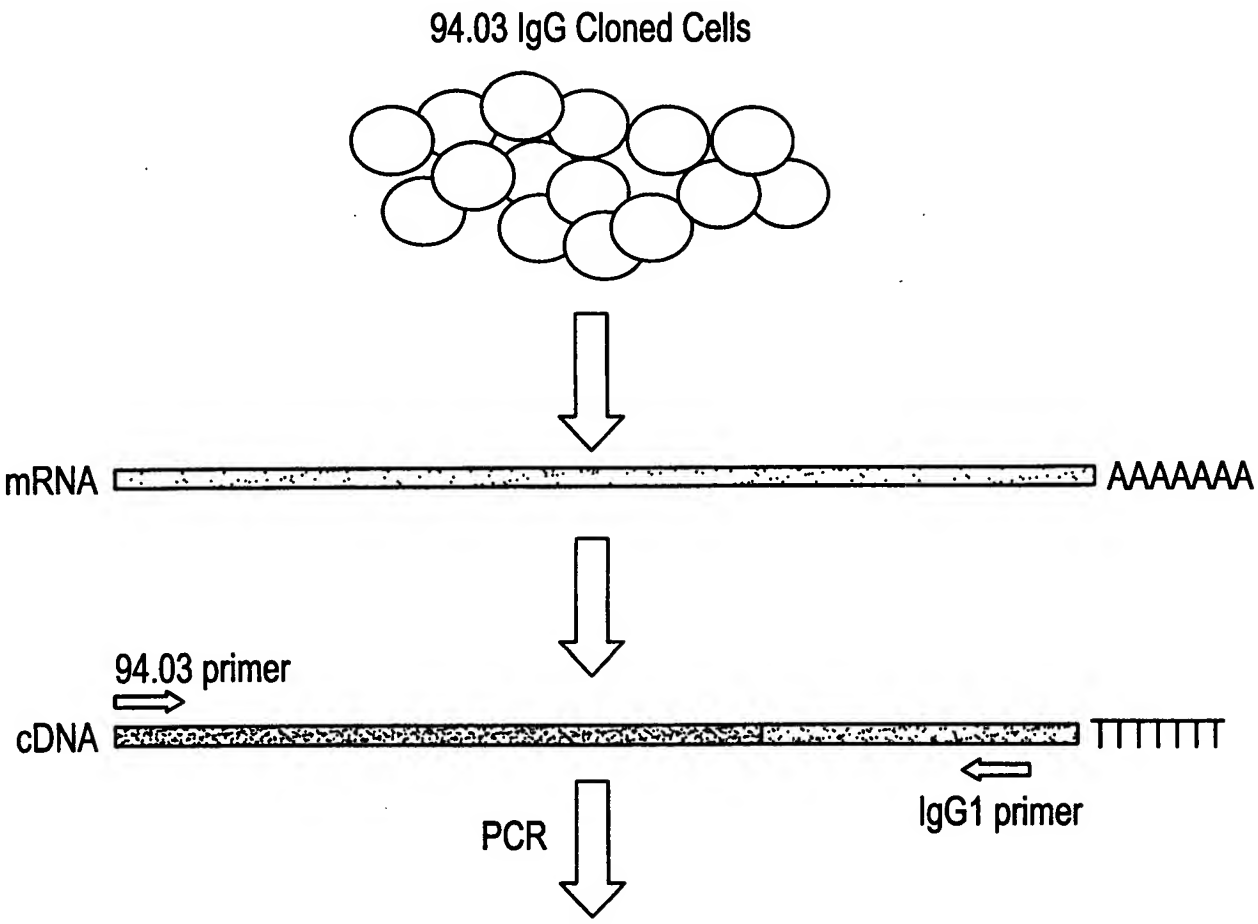


FIG. 51

Sequencing of 94.03 IgG



ATGCAGTTAACATGCATACTGAACTGC**ATGCTTTCCAG**

Sequence with 94.03 V region plus IgG1

FIG. 52

09 V_H Sequence with translation:

```
<---------------------- F R 1 - I M G T ------------------------------

 1               5                  10                  15                  20
 Q [D H L Q Q S G P E L V] K P G A F V K I S
CAG GAT CAC CTG CAG CAG TCT GGA CCT ...GAG CTG GTG AAG CCT GGG GCT TTT GTG AAG ATA TCC

---------->                                                <-------------------
                    _____________________ CDR1 - IMGT _______________
                      25                  30                  35                  40
 C K A S G Y T F T N Y D                                   L N W V R Q
TGC AAG GCT TCT GGT TAC ACC TTC ACA AAC TAC GAT ... ... ... ...CTA AAC TGG GTG AGG CAG

F R 2 - I M G T ---------->                                                  <--
-
                                                  _____________ CDR2 - IMGT _______________
45                  50                  55                  60                  65
 R P G Q G L E W I G W I Y P G N D N T                                     K
AGG CCT GGA CAG GGC CTT GAG TGG ATT GGA TGG ATT TAT CCT GGA AAT GAT AAT ACT ... ...AAG

------------------------------------------------  F R 3 - I M G T --

            70                  75                  80                  85
 Y N E K F K     G L A S L T A D K S S T T A Y
TAC AAT GAG AAG TTC AAG ...GGC CTG GCC TCA CTG ACT GCA GAC AAG TCC TCC ACC ACA GCC TAC

------------------------------------------------------------>

                                                          _____________________
    90                  95                  100                 105                 110
 L H L S S L T S E S S A V Y F C A R G L P R
TTG CAT CTC AGC AGC CTG ACT TCT GAG AGC TCT GCA GTC TAT TTC TGT GCA AGA GGG TTA CCT AGG

CDR3 - IMGT _____________
                  115                 120
 G W Y F D V W G A G T T V T V S S A
GGC TGG TAC TTC GAT GTC TGG GGC GCA GGG ACC ACG GTC ACC GTC TCC TCA GCT
```

FIG. 53

Translation of 09 kappa light chain 1:

```
<---------------------- F R 1 - I M G T ------------------------------

1                5                  10                  15                  20
[N I V M T Q S P K S M S] M S V G E R V T L T
AAC ATT GTA ATG ACC CAA TCT CCC AAA TCC ATG TCC ATG TCA GTA GGA GAG AGG GTC ACC TTG ACC

---------->                                                <----------------------
                 _____________________ CDR1 - IMGT _________________
         25                  30                  35                  40
 C K A S E N V V T Y                                 V S W Y Q Q
TGC AAG GCC AGT GAG AAT GTG GTT ACT TAT ... ... ... ... ... ... GTT TCC TGG TAT CAA CAG

F R 2 - I M G T ---------->                                                <---
                                                  _____________ CDR2 - IMGT _____________
45                  50                  55                  60                  65
 K P E Q S P K L L I Y G A S                                                 N
AAA CCA GAG CAG TCT CCT AAA CTG CTG ATA TAC GGG GCA TCC ... ... ... ... ... ... ... AAC

------------------------------------------------    F R 3 - I M G T ----

            70                  75                  80                  85
 R Y T G V P       D R F T G S G           S A T D F T
CGG TAC ACT GGG GTC CCC ... GAT CGC TTC ACA GGC AGT GGA ... ... TCT GCA ACA GAT TTC ACT

------------------------------------------------------------>
                                                  _____________CDR3 - IMGT
    90                  95                  100                 105                 110
 L T I S S V Q A E D L A D Y H C G Q G Y S Y
CTG ACC ATC AGC AGT GTG CAG GCT GAA GAC CTT GCA GAT TAT CAC TGT GGA CAG GGT TAC AGC TAT

_____________
                   115
 P Y T F G G G
CCG TAC ACG TTC GGA GGG GGG
```

FIG. 54 Translation of 09 kappa light chain 2:

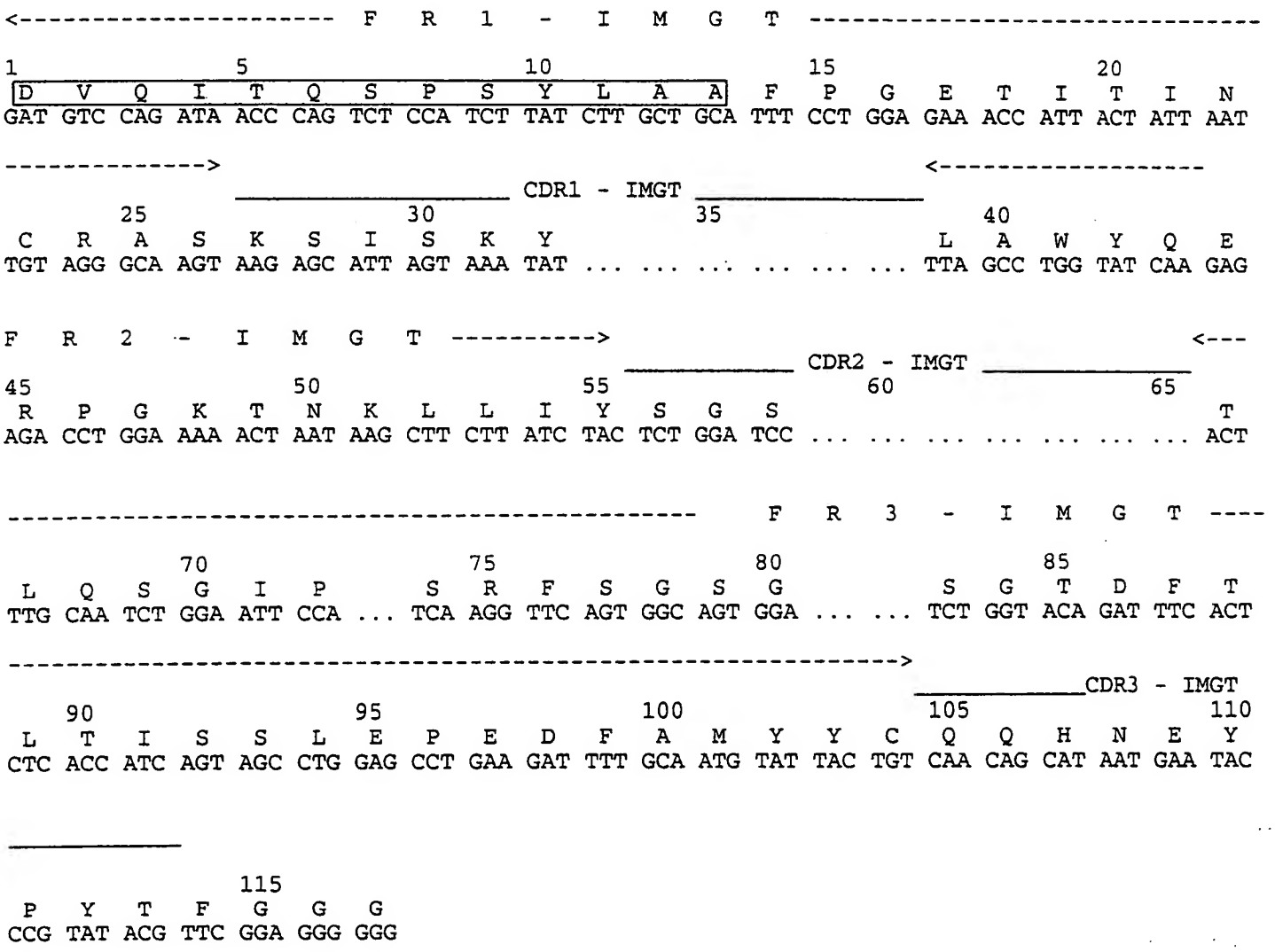


FIG. 55

Translation of AKJR 4 Heavy Chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                   10                  15                  20
 E   V   Q   L   L   E   S   G   G       G   L   V   Q   P   G   G   S   L   R   L   S
GAG GTG CAA CTA TTG GAA TCT GGG GGA ... GGC TTG GTA CAG CCT GGG GGG TCC CTG AGA CTC TCC

---------------->                                                 <----------------------
                 ____________________ CDR1 - IMGT _________________
          25                  30                  35                  40
 C   A   A   S   G   F   S   F   I   D   Y   A                       M   S   W   V   R   Q
TGT GCA GCC TCT GGA TTC AGC TTT ATC GAC TAT GCC ... ... ... ... ATG AGC TGG GTC CGC CAG

F   R   2   -   I   M   G   T ---------->                                          <---
                                          _____________ CDR2 - IMGT _________________
45                  50                  55                  60                  65
 A   P   G   K   G   L   E   W   V   S   S   L   S   G   D   S   G   S   S           Y
GCT CCA GGG AAG GGA CTG GAG TGG GTC TCA AGT CTT AGT GGT GAT AGT GGT AGT TCA ... ... TAT

-----------------------------------------------    F   R   3   -   I   M   G   T ----

          70                  75                  80                  85
 Y   A   D   S   V   K       G   R   F   T   I   S   R   D   N   S   K   S   T   V   F
TAT GCA GAC TCC GTG AAG ... GGC CGA TTC ACC ATC TCC AGA GAC AAT TCC AAG AGC ACG GTG TTT

-------------------------------------------------------------->
                                                                _____________CDR3 - IMGT
    90                  95                  100                 105                 110
 L   Q   L   S   S   L   R   A   E   D   T   A   I   Y   Y   C   A   Q   E   T   G   P
CTG CAA CTG AGC AGC CTG AGA GCC GAG GAC ACG GCC ATA TAT TAC TGT GCG CAG GAG ACC GGT CCC


_____________
                115                 120                 125                 130
 Q   R   R   W   G   Q   G   T   L   V   T   V   S   S   G   S   A   S   A   P   T   L
CAG CGT CGC TGG GGC CAG GGA ACC CTG GTC ACC GTC TCC TCA GGG AGT GCA TCC GCC CCA ACC CTT
```

FIG. 56

Translation of AKJR 4 Kappa Light Chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                   10                  15                  20
 D   I   Q   M   T   Q   S   P   S   T   L   S   A   S   V   G   D   R   V   T   I   T
GAC ATC CAG ATG ACC CAG TCT CCT TCC ACC CTG TCT GCA TCT GTA GGG GAC AGA GTC ACC ATC ACT

--------------->                                              <--------------------
                _____________________ CDR1 - IMGT _________________
        25                  30                  35                  40
 C   R   A   S   Q   S   I   S   S   W                       L   A   W   Y   Q   Q
TGC CGG GCC AGT CAG AGT ATT AGT AGC TGG ... ... ... ... ... ... TTG GCC TGG TAT CAG CAG

F   R   2   -   I   M   G   T ---------->                                      <---
                                        _____________ CDR2 - IMGT _______________
45                  50                  55                  60                  65
 K   P   G   K   A   P   K   L   L   I   Y   K   A   F                           N
AAA CCA GGG AAA GCC CCT AAA CTC CTG ATC TAT AAG GCG TTT ... ... ... ... ... ... ... AAT

------------------------------------------------    F   R   3   -   I   M   G   T ----

          70                  75                  80                  85
 L   E   S   G   V   P       S   R   F   R   G   S   G               S   G   T   E   F   T
TTA GAA AGT GGG GTC CCA ... TCA AGG TTC AGA GGC AGT GGC ... ... TCT GGG ACA GAA TTC ACT

------------------------------------------------------------>
                                                    _____________CDR3 - IMGT
   90                  95                  100                 105                 110
 L   T   I   S   S   L   Q   P   D   D   S   A   T   Y   Y   C   Q   Q   Y   S   S   Y
CTC ACC ATC AGC AGC CTG CAG CCT GAT GAT TCT GCA ACT TAT TAC TGC CAG CAG TAT AGT AGT TAC


_____________
                115                 120                 125                 130
 P   L   T   F   G   G   G   T   K   V   D   I   K   R   T   V   A   A   P   S   V   F
CCC CTC ACT TTC GGC GGA GGG ACC AAG GTG GAC ATT AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC
```

FIG. 57 Translation of CB2i-E12 Heavy Chain:

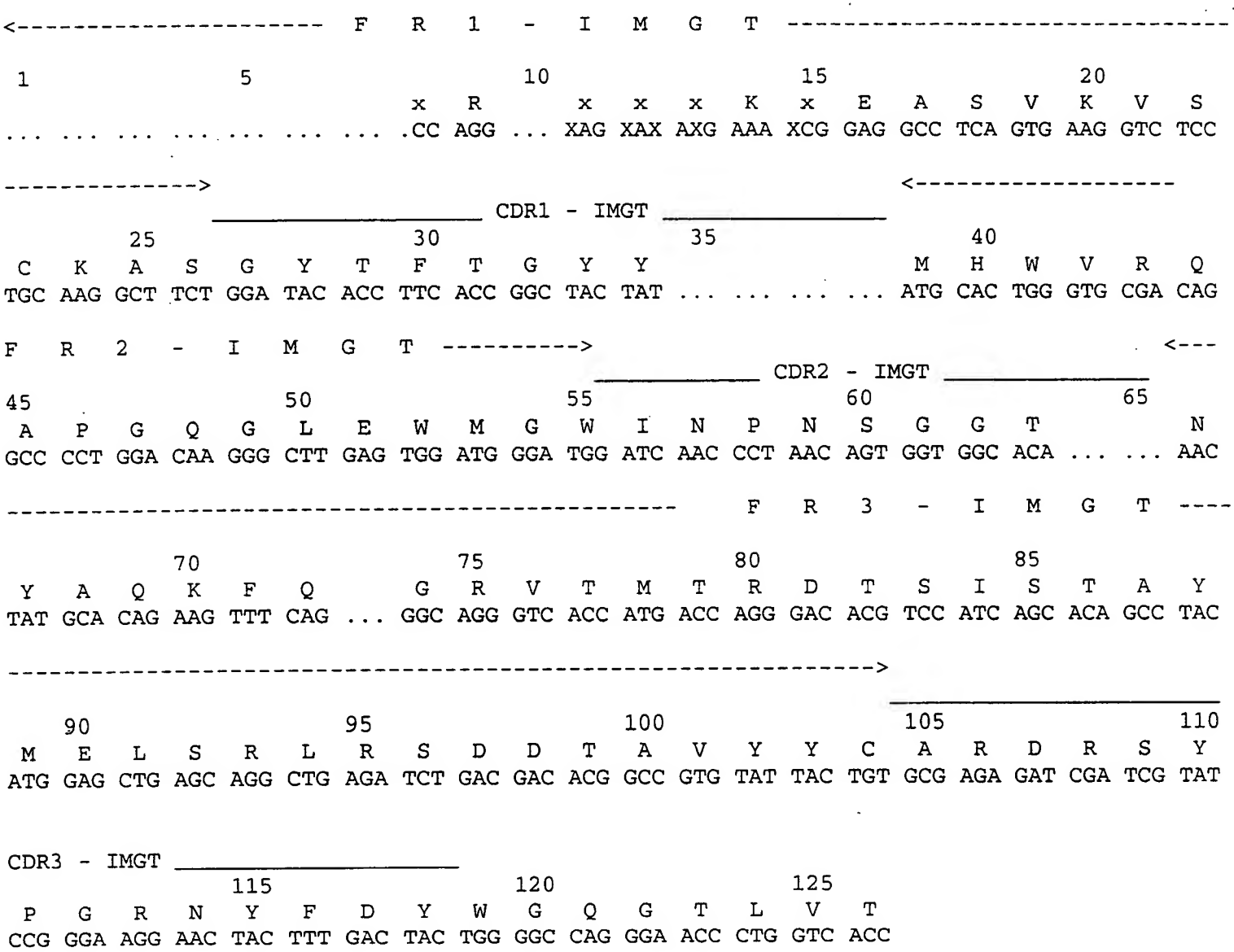


FIG. 58 Translation of CB2i-E12 kappa chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1               5                   10                  15                  20
 E   I   V   L   T   Q   S   P   G   T   L   S   L   S   P   G   E   R   A   T   L   S
GAA ATT GTG TTG ACG CAG TCT CCA GGC ACC CTG TCT TTG TCT CCA GGG GAA AGA GCC ACC CTC TCC

-------------->                                                 <-------------------
               _____________________ CDR1 - IMGT _________________
          25                  30                  35                  40
 C   R   A   S   Q   S   V   S   S   S   Y                           L   A   W   Y   Q   Q
TGC AGG GCC AGT CAG AGT GTT AGC AGC AGC TAC ... ... ... ... ... TTA GCC TGG TAC CAG CAG

F   R   2   -   I   M   G   T ---------->                                           <---
                                          _____________ CDR2 - IMGT _________________
45                  50                  55                  60                  65
 K   P   G   Q   A   P   R   L   L   I   Y   G   A   S                               S
AAA CCT GGC CAG GCT CCC AGG CTC CTC ATC TAT GGT GCA TCC ... ... ... ... ... ... ... AGC

-------------------------------------------------    F   R   3   -   I   M   G   T ----

          70                  75                  80                  85
 R   A   T   G   I   P       D   R   F   S   G   S   G           S   G   T   D   F   T
AGG GCC ACT GGC ATC CCA ... GAC AGG TTC AGT GGC AGT GGG ... ... TCT GGG ACA GAC TTC ACT

------------------------------------------------------------------>
                                                    _____________CDR3 - IMGT
     90                  95                  100                 105                 110
 L   T   I   S   R   L   E   P   E   D   F   A   V   Y   Y   C   Q   Q   Y   G   S   S
CTC ACC ATC AGC AGA CTG GAG CCT GAA GAT TTT GCA GTG TAT TAC TGT CAG CAG TAT GGT AGC TCT


_______
              115
 H   T   F   G   Q   G
CAC ACT TTT GGC CAG GGG
```

FIG. 59 Translation of CB2i-E7 Heavy Chain:

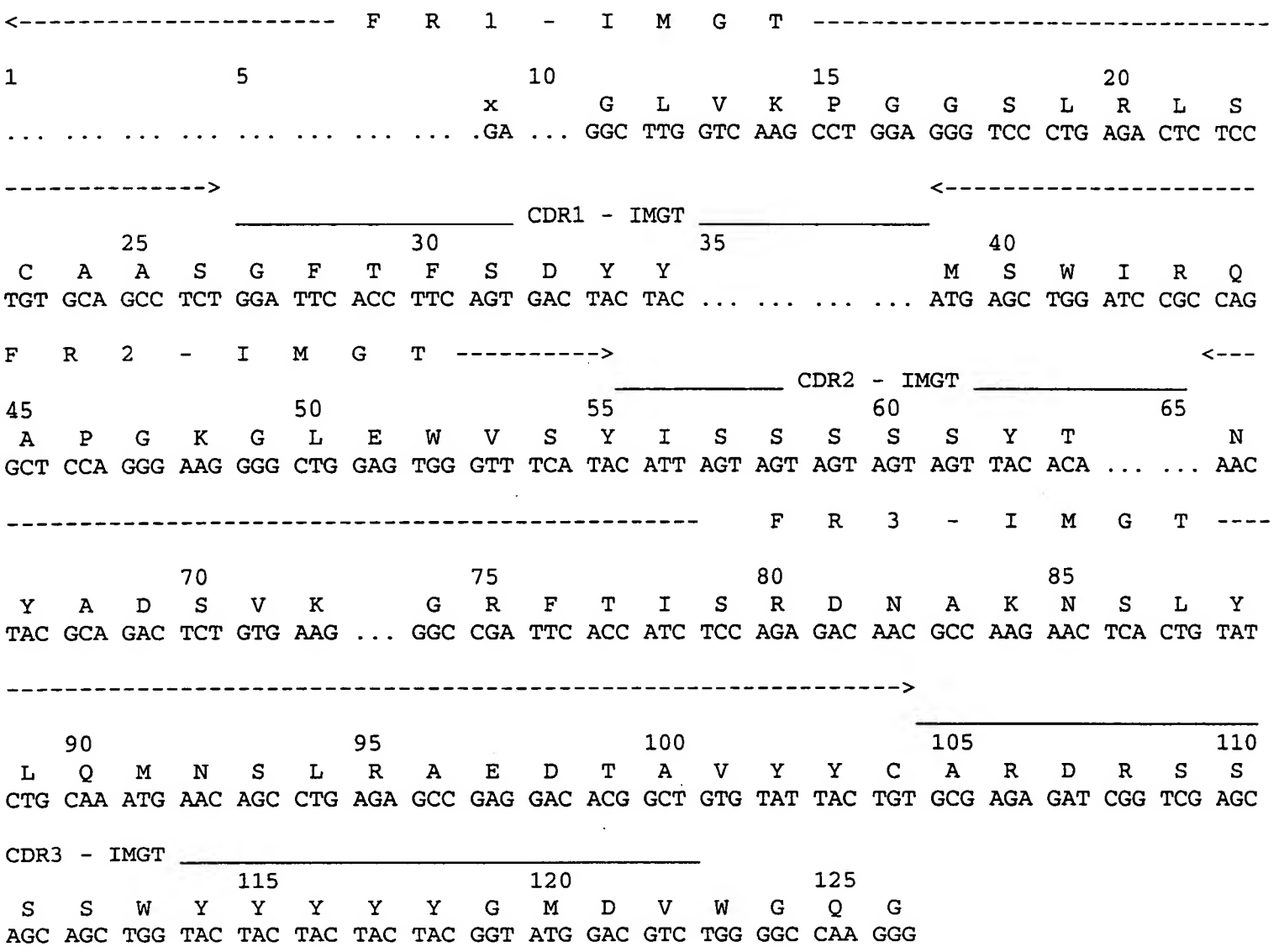


FIG. 60 Translation of CB2i-E7 kappa Chain:

```
<---------------------- F   R   1   -   I   M   G   T ------------------------------

1                5                   10                  15                  20
 D   I   Q   M   T   Q   S   P   S   S   L   S   A   S   V   G   D   R   V   T   I   T
GAC ATC CAG ATG ACC CAG TCT CCA TCC TCC CTG TCT GCA TCT GTA GGA GAC AGA GTC ACC ATC ACT

--------------->                                                <-------------------
                _____________________ CDR1 - IMGT _________________
        25                  30                  35                  40
 C   R   A   S   Q   G   I   S   N   Y                               L   A   W   Y   Q   Q
TGC CGG GCG AGT CAG GGC ATT AGC AAT TAT ... ... ... ... ... ... TTA GCC TGG TAT CAG CAG

F   R   2   -   I   M   G   T ---------->                                          <---
                                          _____________ CDR2 - IMGT _________________
45                  50                  55                  60                  65
 K   P   G   K   V   P   K   L   L   I   Y   A   A   S                                   T
AAA CCA GGG AAA GTT CCT AAG CTC CTG ATC TAT GCT GCA TCC ... ... ... ... ... ... ... ACT

-------------------------------------------------    F   R   3   -   I   M   G   T ----

            70                  75                  80                  85
 L   Q   S   G   V   P       S   R   F   N   G   S   G               S   G   T   D   F   T
TTG CAA TCA GGG GTC CCA ... TCT CGG TTC AAT GGC AGT GGA ... ... TCT GGG ACA GAT TTC ACT

------------------------------------------------------------------->
                                                    _____________CDR3 - IMGT
     90                  95                  100                 105                 110
 L   T   I   S   S   L   Q   P   E   D   V   A   T   Y   Y   C   Q   K   Y   N   K   C
CTC ACC ATC AGC AGC CTG CAA CCT GAA GAT GTT GCA ACT TAT TAC TGT CAA AAG TAT AAC AAG TGC


_____________
                115
 P   S   H   F   R   G   R   D
CCC TCT CAC TTT CGG GGG AGG GAC
```

FIG. 61

Translation Of MSI 19-E5 Light Chain

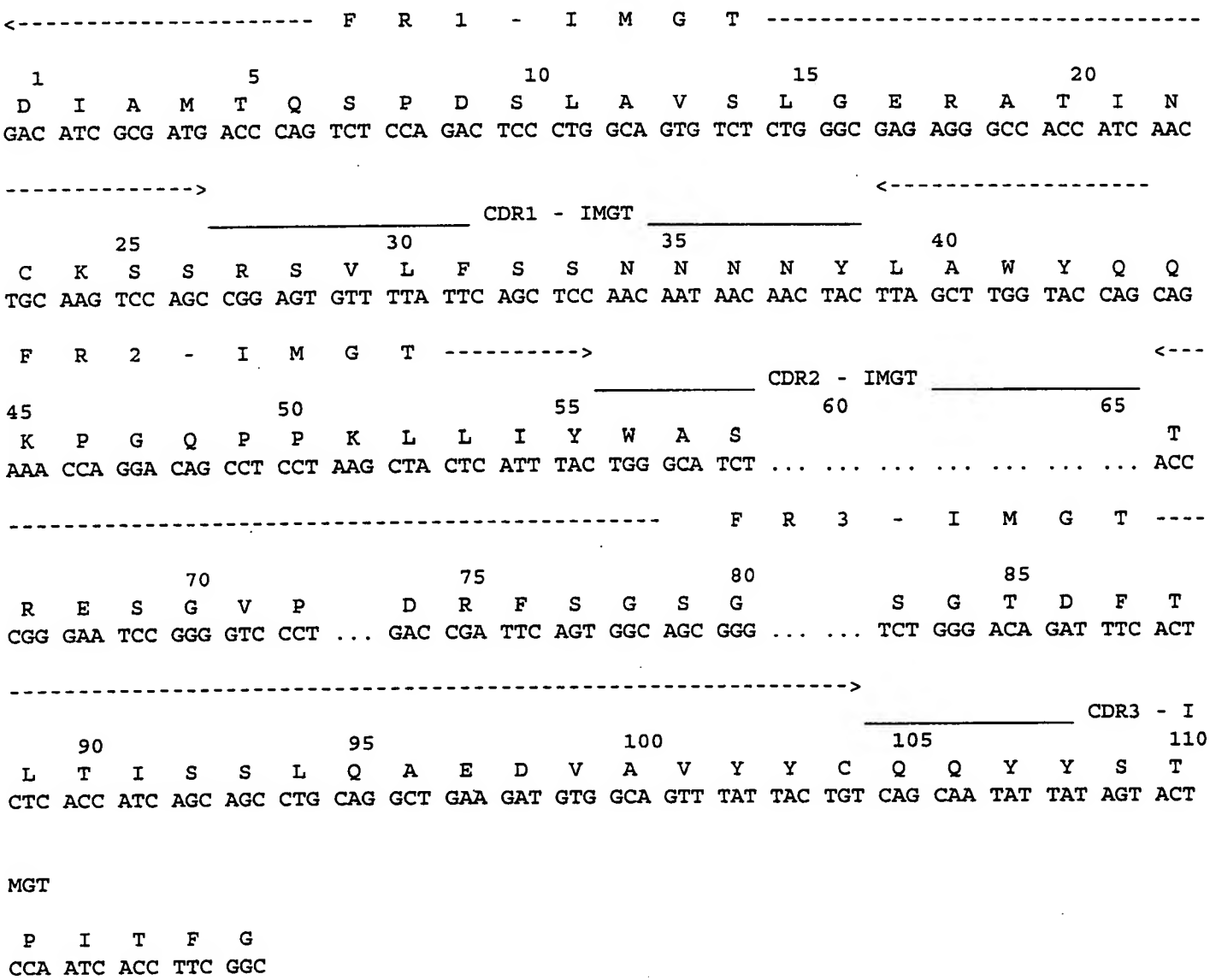


FIG. 62

Translation of 04 kappa chain 2:

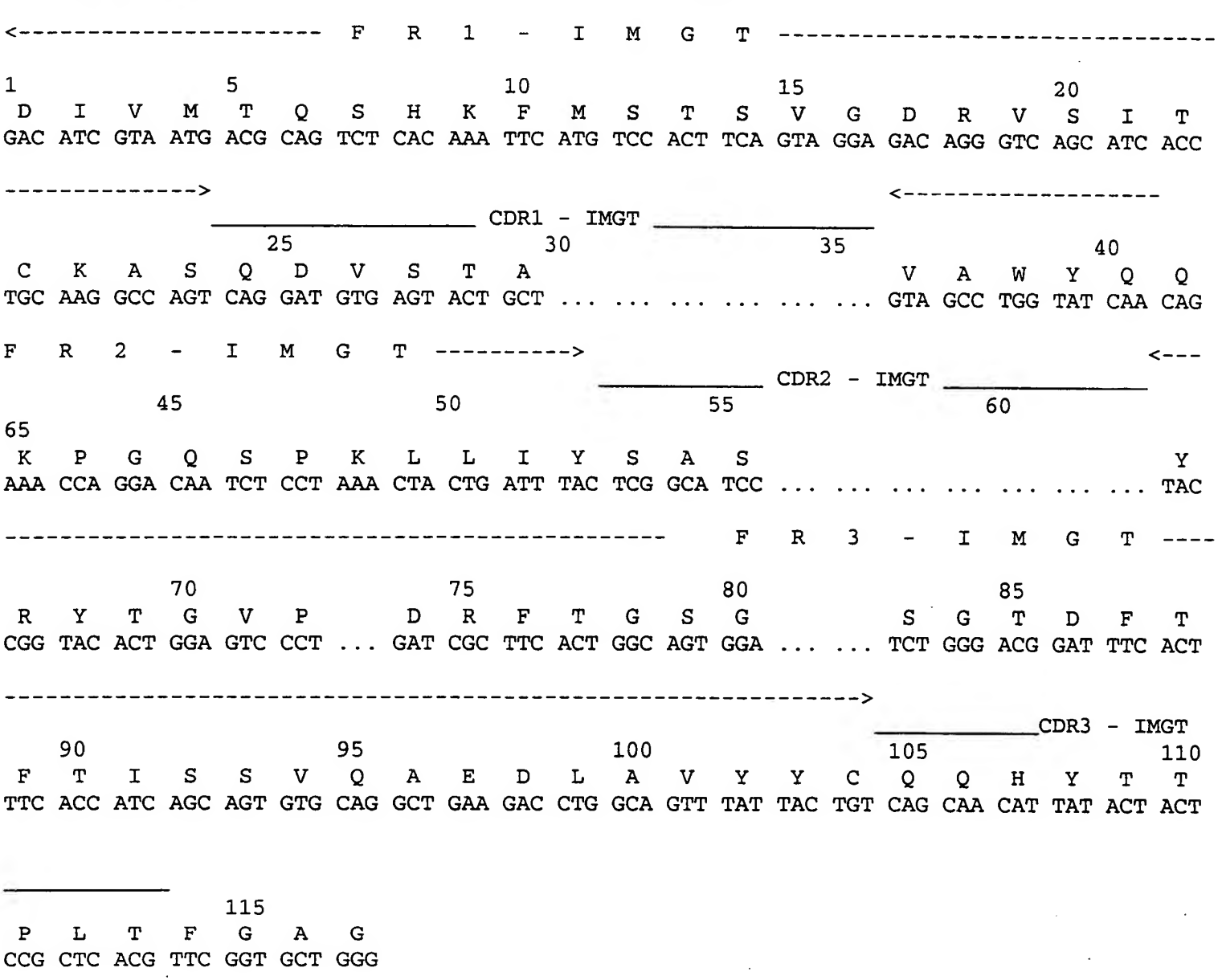


FIG. 63A

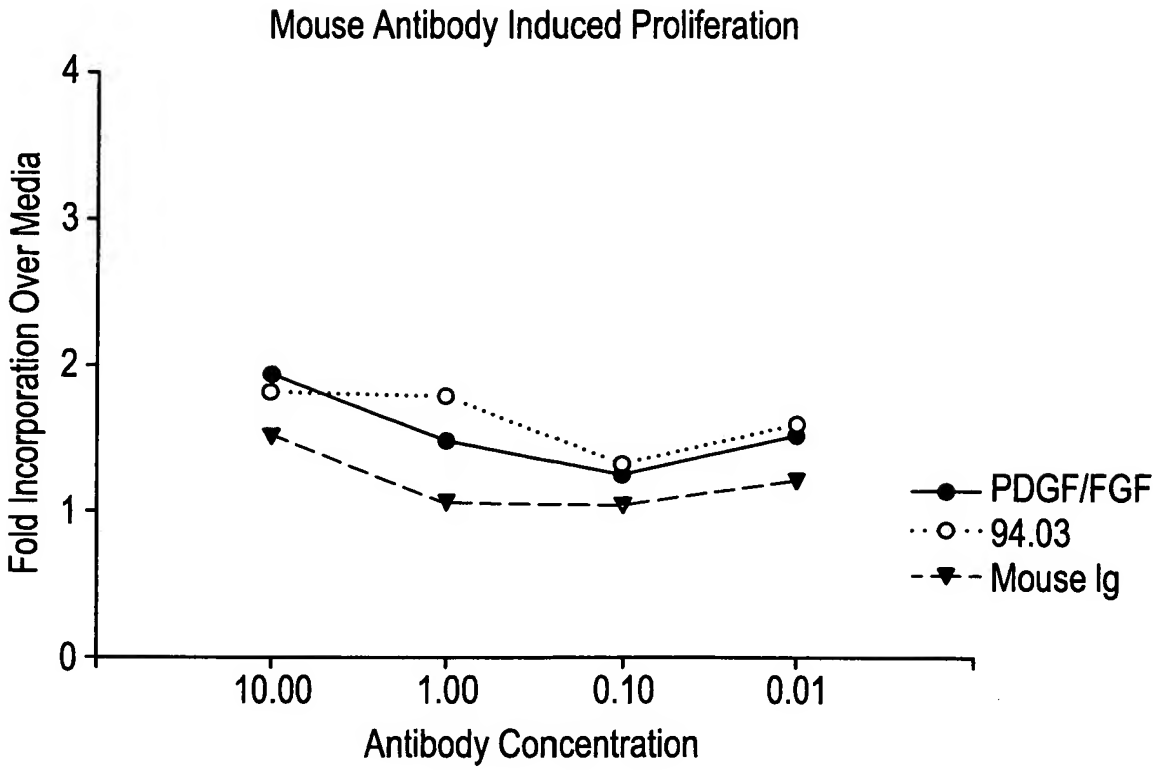


FIG. 63B

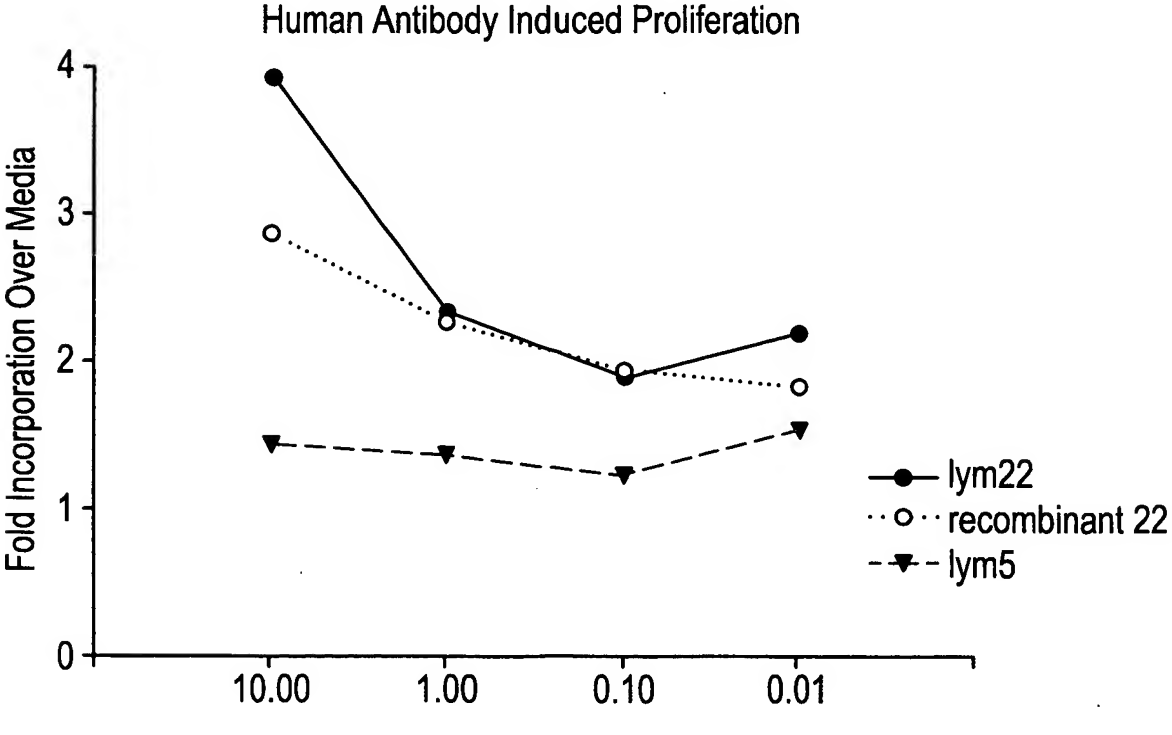


FIG. 64

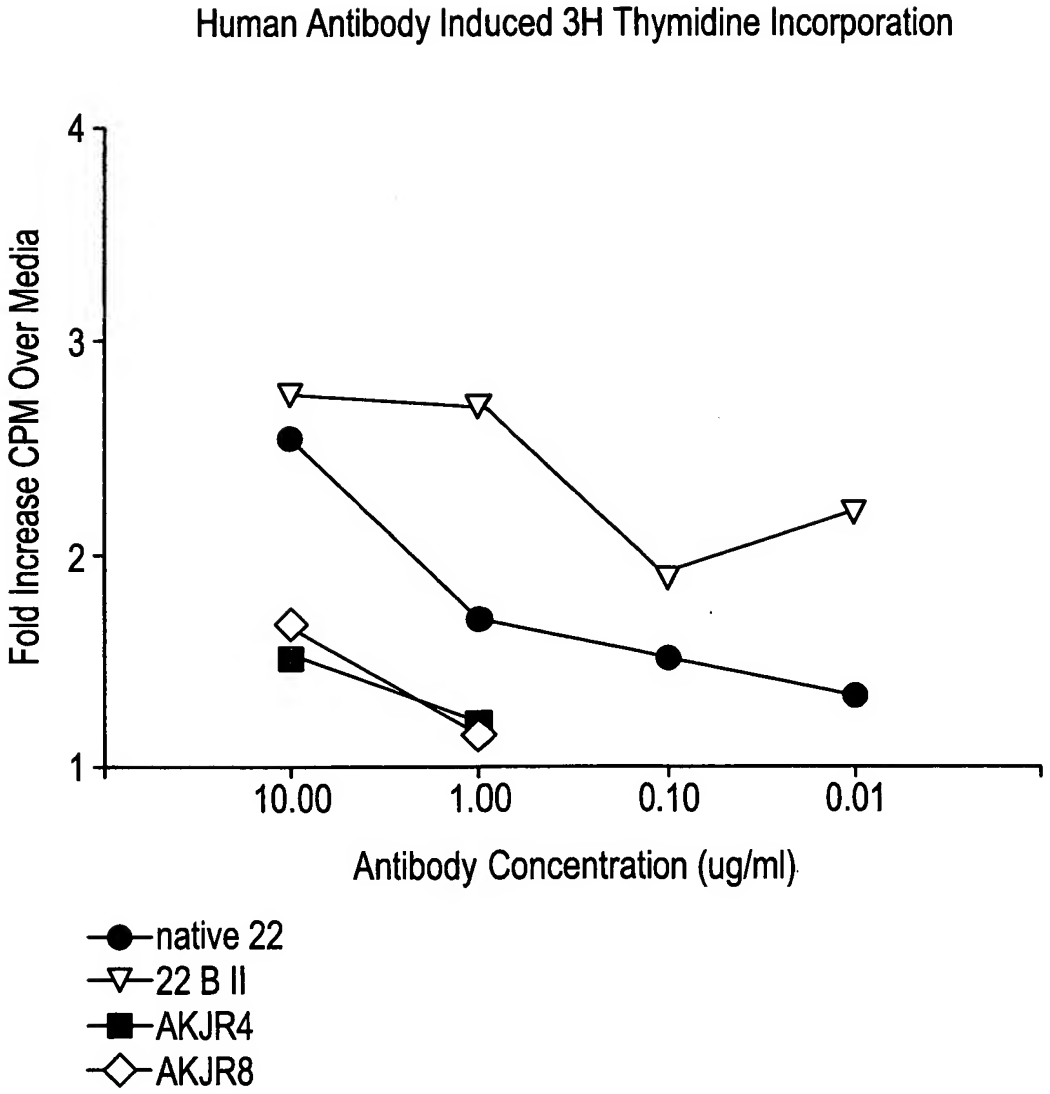


FIG. 65

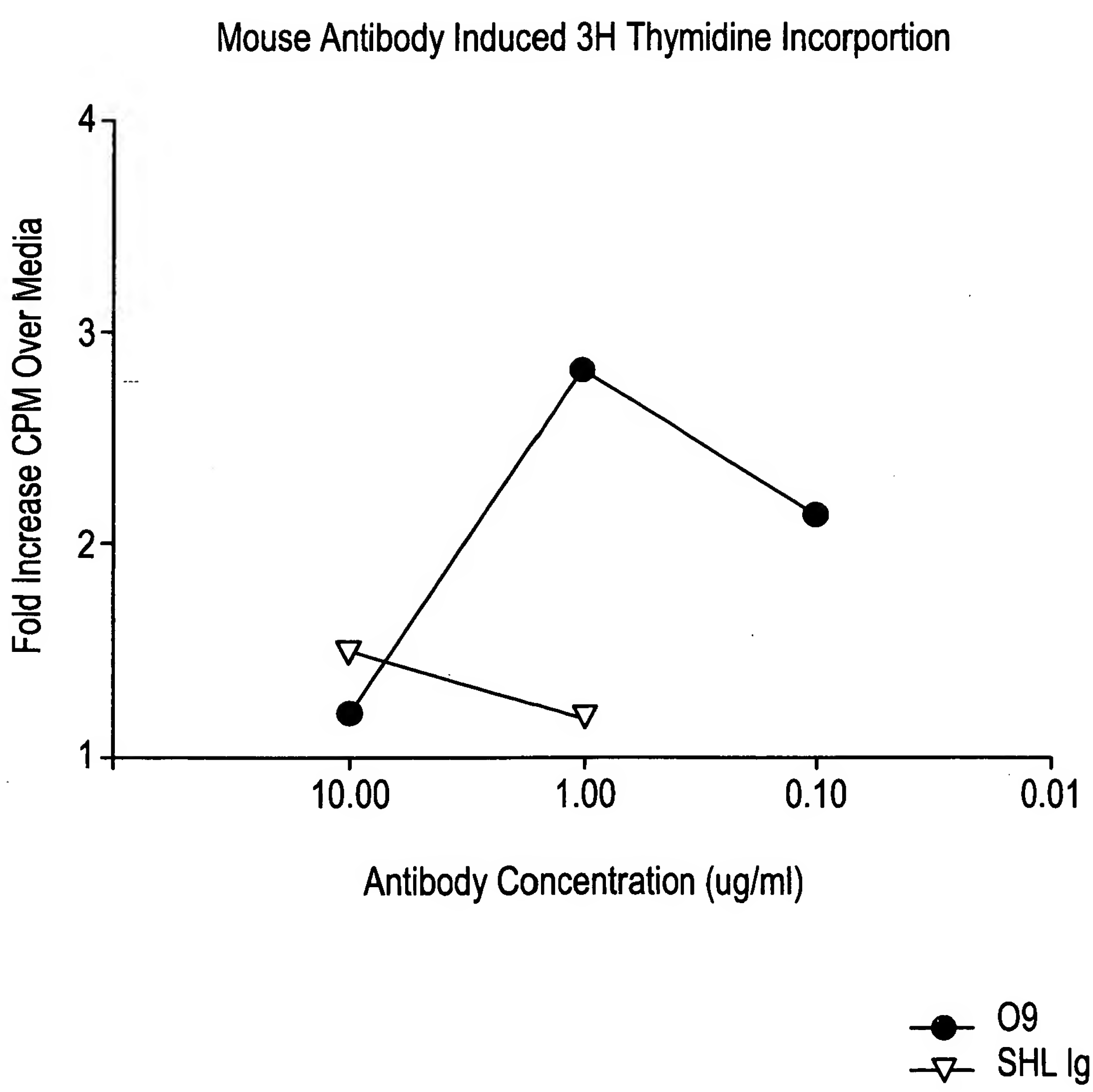
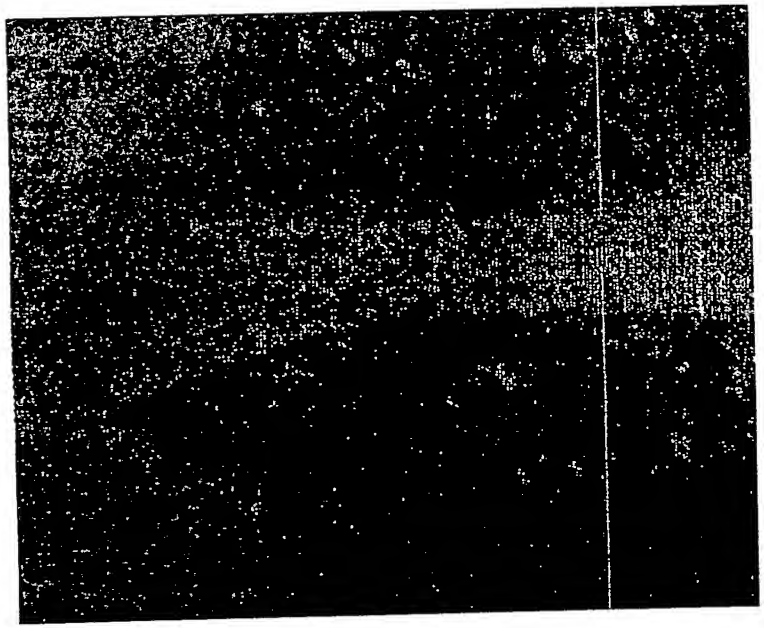
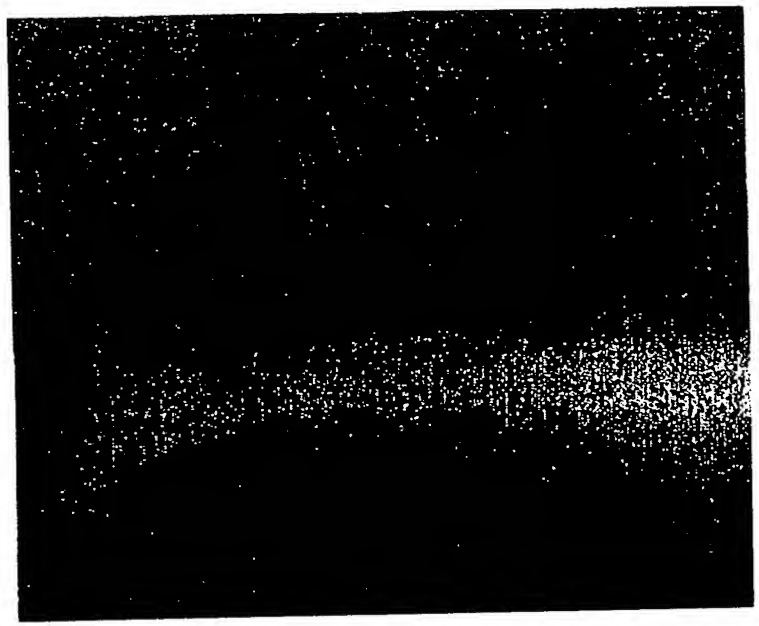


FIG. 66A



sHIgM 22

FIG. 66B



rHIgM 22

FIG. 68

TRANSLATION OF 01 KAPPA CHAIN

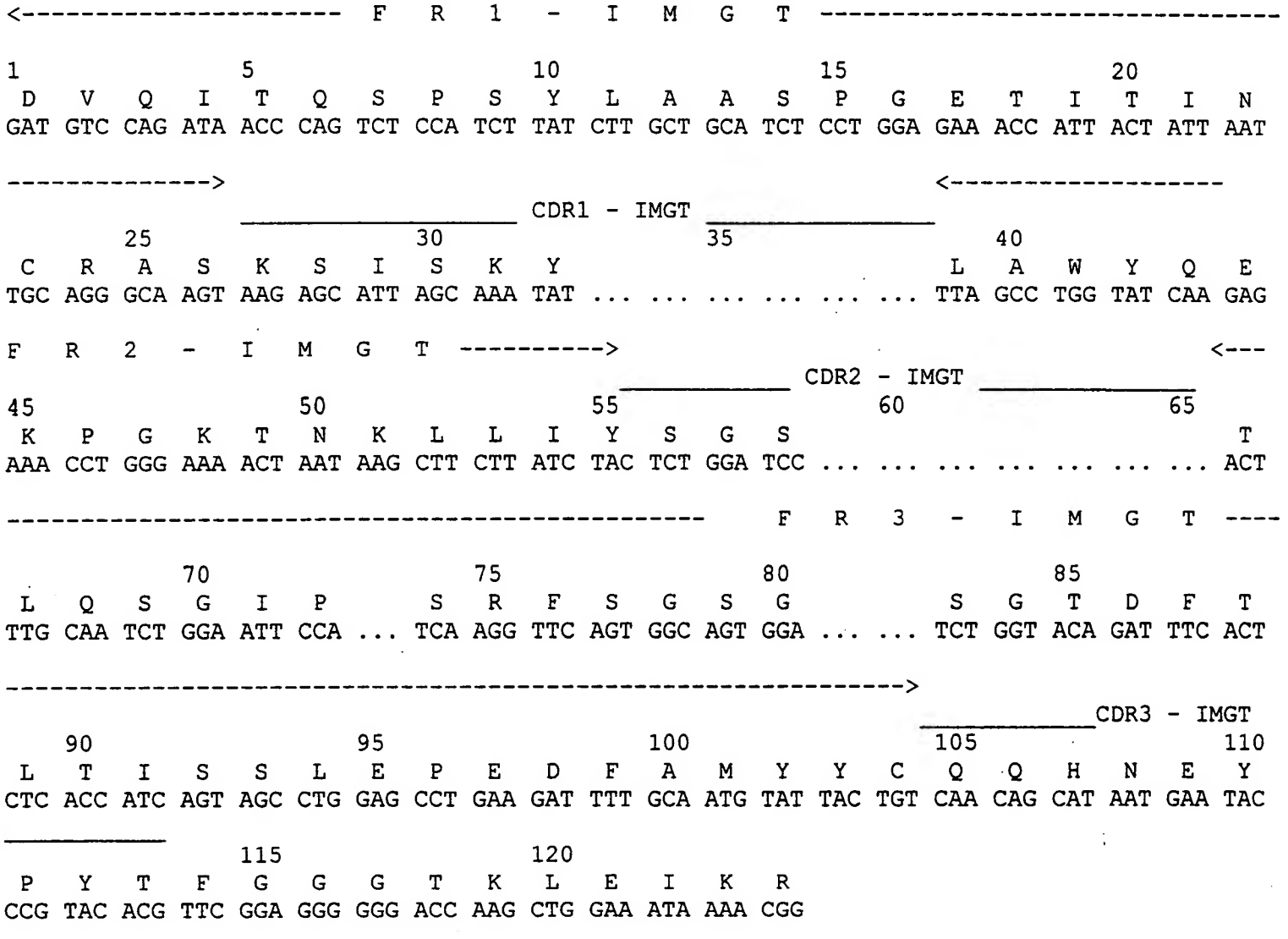


FIG. 69

TRANSLATION OF HNK-1 KAPPA CHAIN

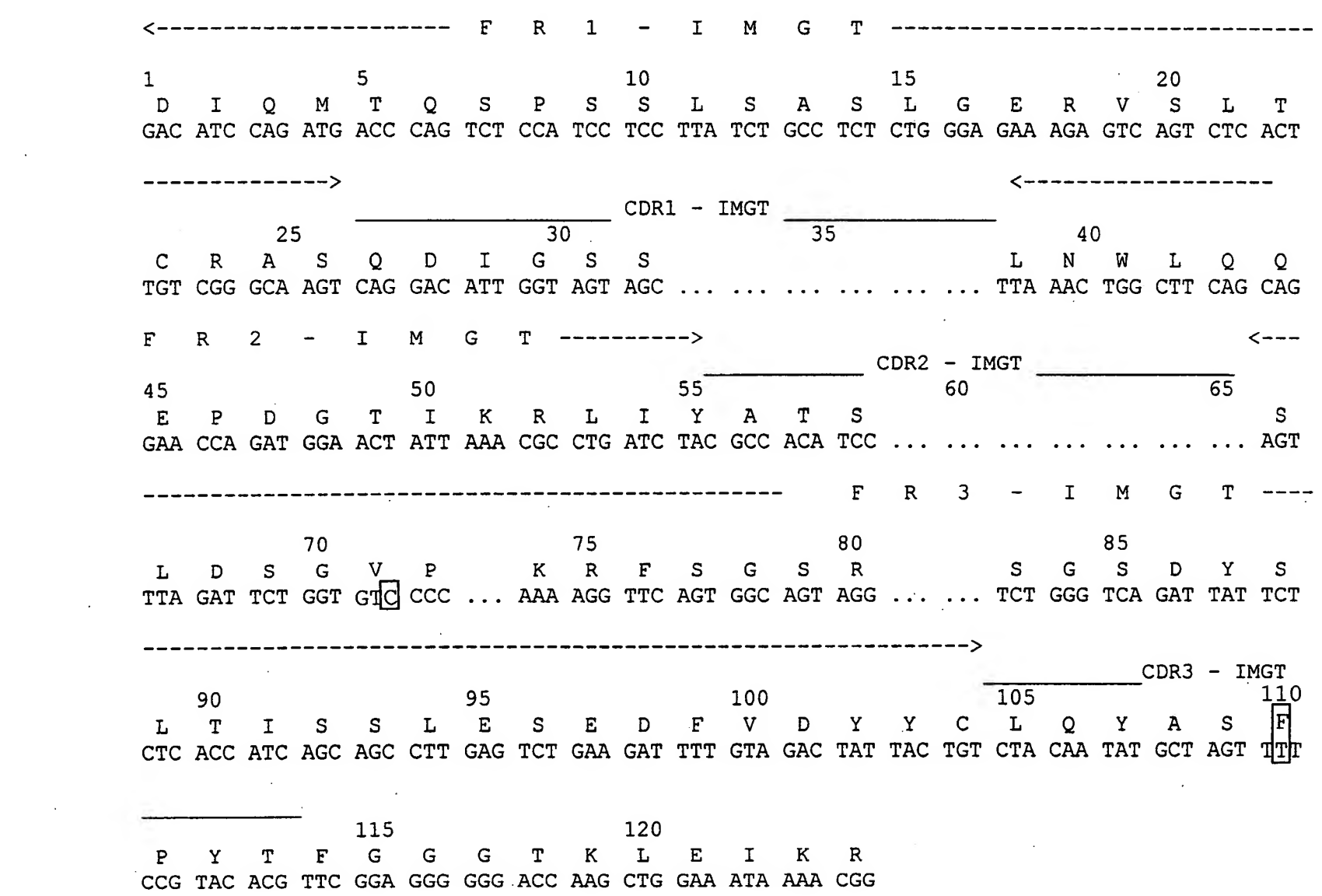


FIG. 70

TRANSLATION OF A2B5 KAPPA CHAIN

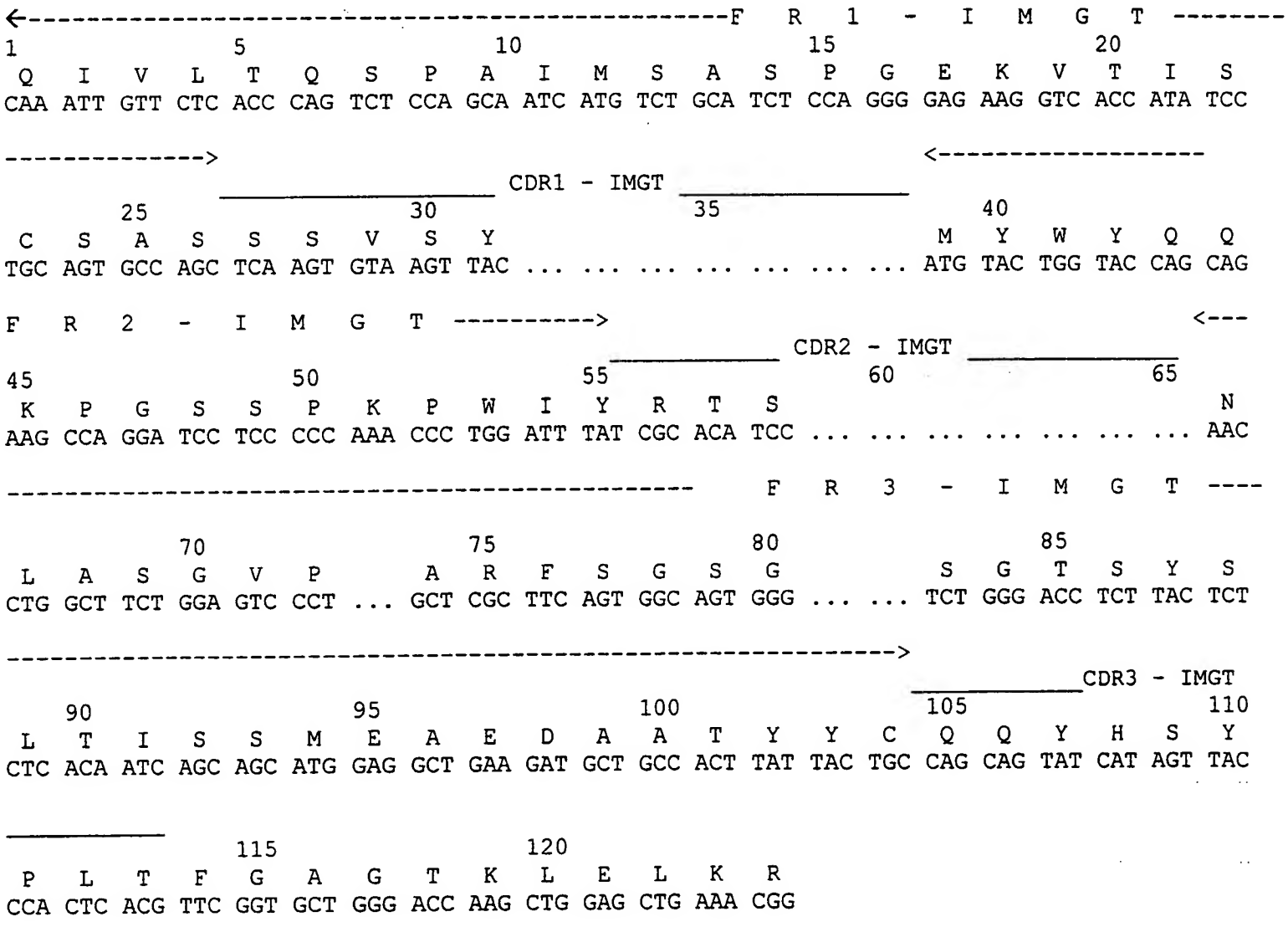


FIG. 71

LYM 46 Heavy Chain Sequence:

FR 1

E V Q L V E S G G G L V Q P G
GAG GTG CAG CTG GTG GAG TCT GGG GGA GGC TTG GTC CAG CCT GGG

CDR1

G S L R L S C A A S G F T F S
GGG TCC CTG AGA CTC TCC TGT GCA GCC TCT GGA TTC ACC TTT AGT

FR 2

S Y W M T W V R Q A P G K G L
AGC TAT TGG ATG ACC TGG GTC CGC CAG GCT CCA GGG AAG GGG CTG

CDR2

E W V A N I K K D G S E K S Y
GAG TGG GTG GCC AAC ATA AAG AAA GAT GGA AGT GAG AAA TCC TAT

FR3

V D S V K G R F T T S R D N A
GTG GAC TCT GTG AAG GGC CGA TTC ACC ACC TCC AGA GAC AAC GCC

K N S L Y L Q M N S L R A E D
AAG AAC TCA CTG TAT CTG CAA ATG AAC AGC CTG AGA GCC GAG GAC

CDR3

T A V Y Y C A R P N C G G D C
ACG GCT GTG TAT TAC TGT GCG AGA CCC AAT TGT GGT GGT GAC TGC

Y L P W Y F D L W G R G T L V
TAT TTA CCA TGG TAC TTC GAT CTC TGG GGC CGT GGC ACC CTG GTC

T V S S
ACT GTC TCC TCA

FIG. 72

YM 46 KAPPA LIGHT CHAIN SEQUENCE:

```
:---------------------- F   R   1   -   I   M   G   T ------------------------------

                5                   10                  15                  20
D   I   V   M   T   Q   S   P   D   S   L   A   V   S   L   G   E   R   A   T   I   N
:AC ATC GTG ATG ACC CAG TCT CCA GAC TCC CTG GCT GTG TCT CTG GGC GAG AGG GCC ACC ATC AAC

-------------->                                                <-------------------

                      _____________________ CDR1 - IMGT _____________________
      25                  30                  35                  40
C   K   S   S   Q   S   V   L   Y   S   S   N   N   K   N   Y   L   A   W   Y   Q   Q
:GC AAG TCC AGC CAG AGT GTT TTA TAC AGC TCC AAC AAT AAG AAC TAC TTA GCT TGG TAC CAG CAG

'   R   2   -   I   M   G   T ---------->                                      <---

                                          _____________ CDR2 - IMGT _____________
,5                  50                  55                  60                  65
K   P   G   Q   P   P   K   L   L   I   Y   W   A   S                           T
AA CCA GGA CAG CCT CCT AAA CTA CTC ATT TAC TGG GCA TCT ... ... ... ... ... ... ... ACC

-------------------------------------------- F   R   3   -   I   M   G   T ----

            70                  75                  80                  85
R   E   S   G   V   P       D   R   F   S   G   S   G           S   G   T   D   F   T
:GG GAA TCC GGG GTC CCT ... GAC CGA TTC AGT GGC AGC GGG ... ... TCT GGG ACA GAT TTC ACT

---------------------------------------------------------->

                                                  _____________CDR3 - IMGT
    90                  95                  100                 105                 110
L   T   I   S   S   L   Q   A   E   D   V   A   V   Y   Y   C   Q   Q   Y   Y   N   T
:TC ACC ATC AGC AGC CTG CAG GCT GAA GAT GTG GCA GTT TAT TAC TGT CAG CAA TAT TAT AAT ACT


_____________
                115                 120                 125                 130
P   Q   A   F   G   Q   G   T   K   V   E   I   K   R   T   V   A   A   P   S   V   F
:CT CAG GCG TTC GGC CAA GGG ACC AAG GTG GAA ATC AAA CGA ACT GTG GCT GCA CCA TCT GTC TTC
```

FIG. 73

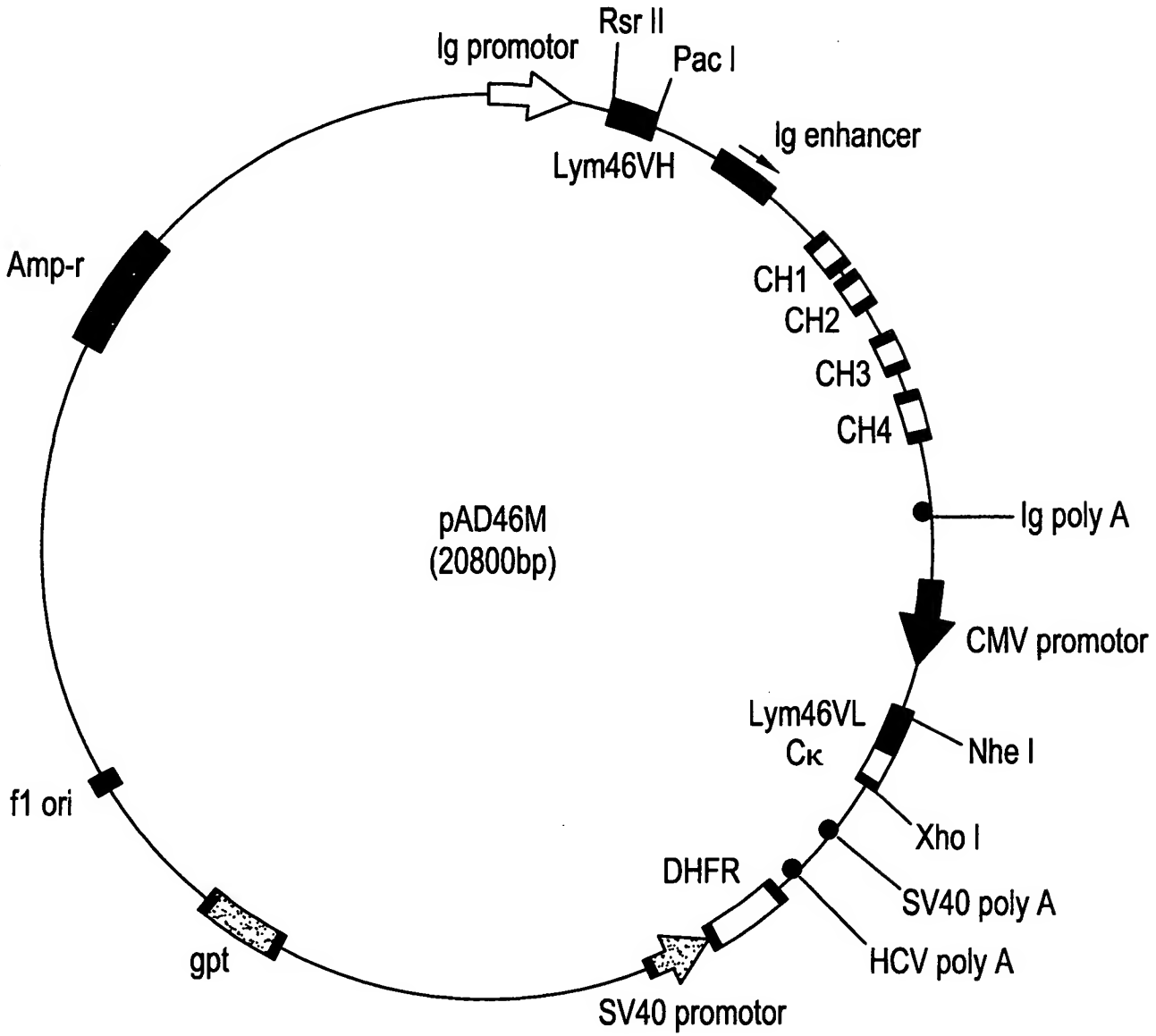


FIG. 74

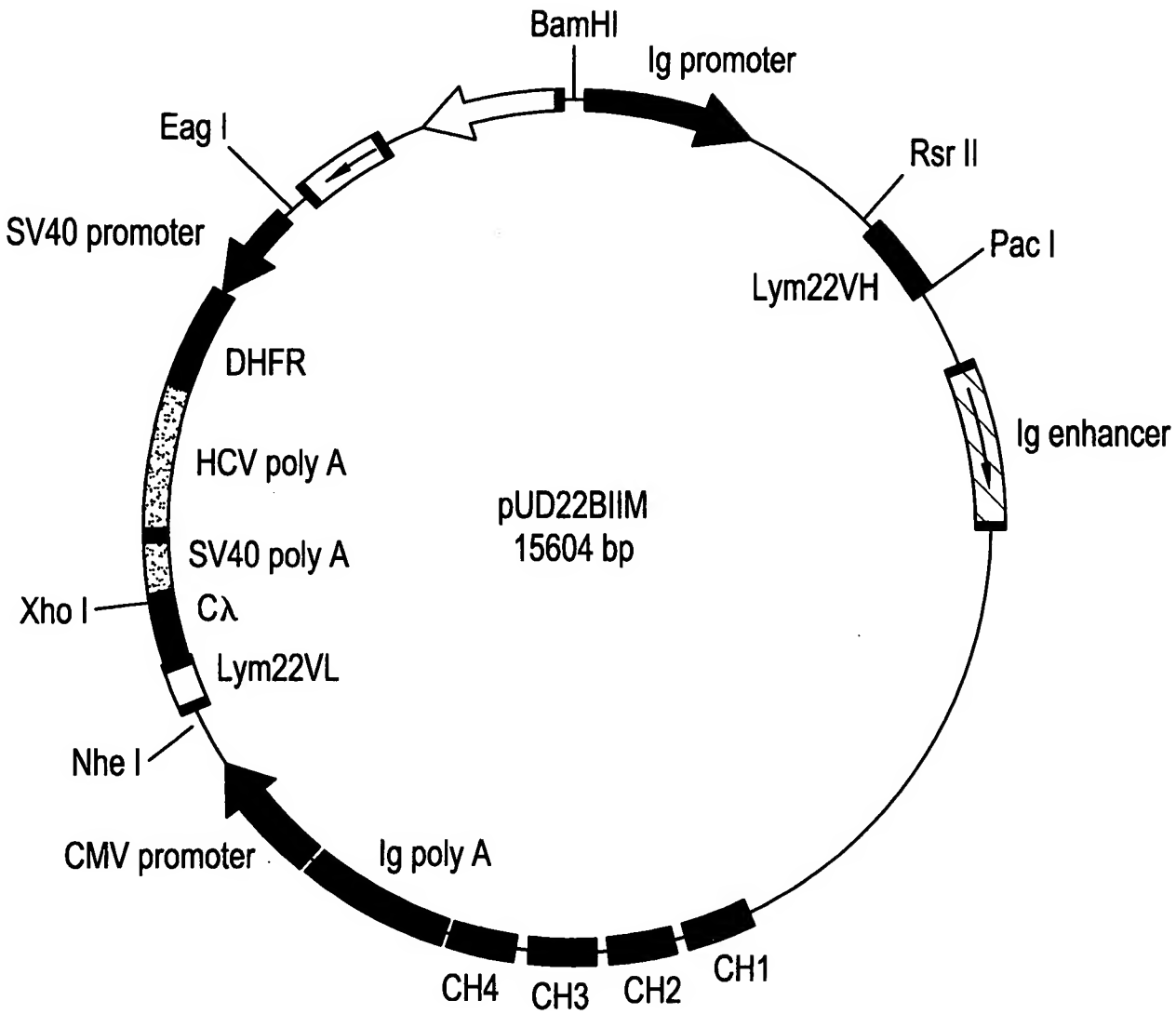


FIG. 75

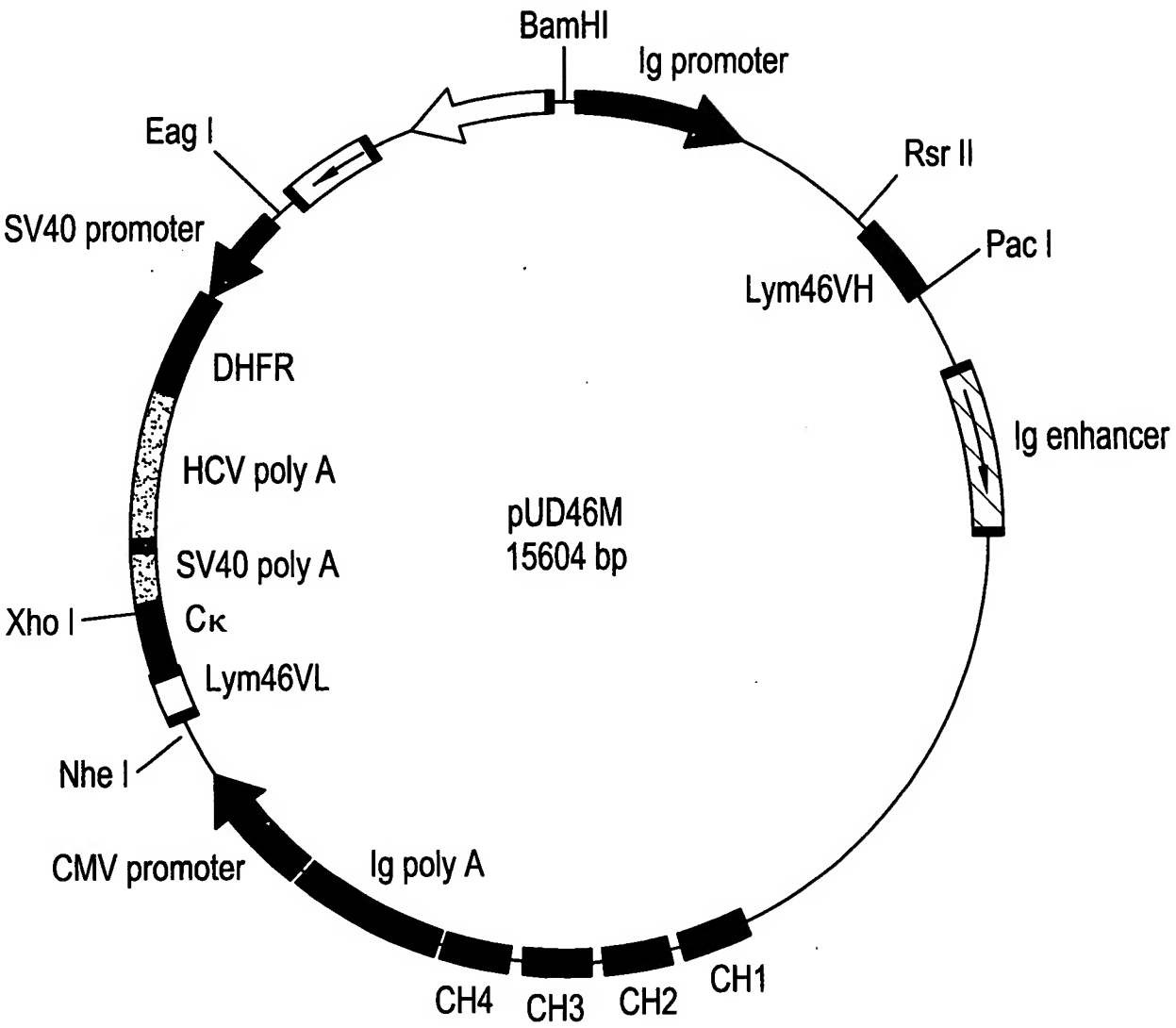


FIG. 76

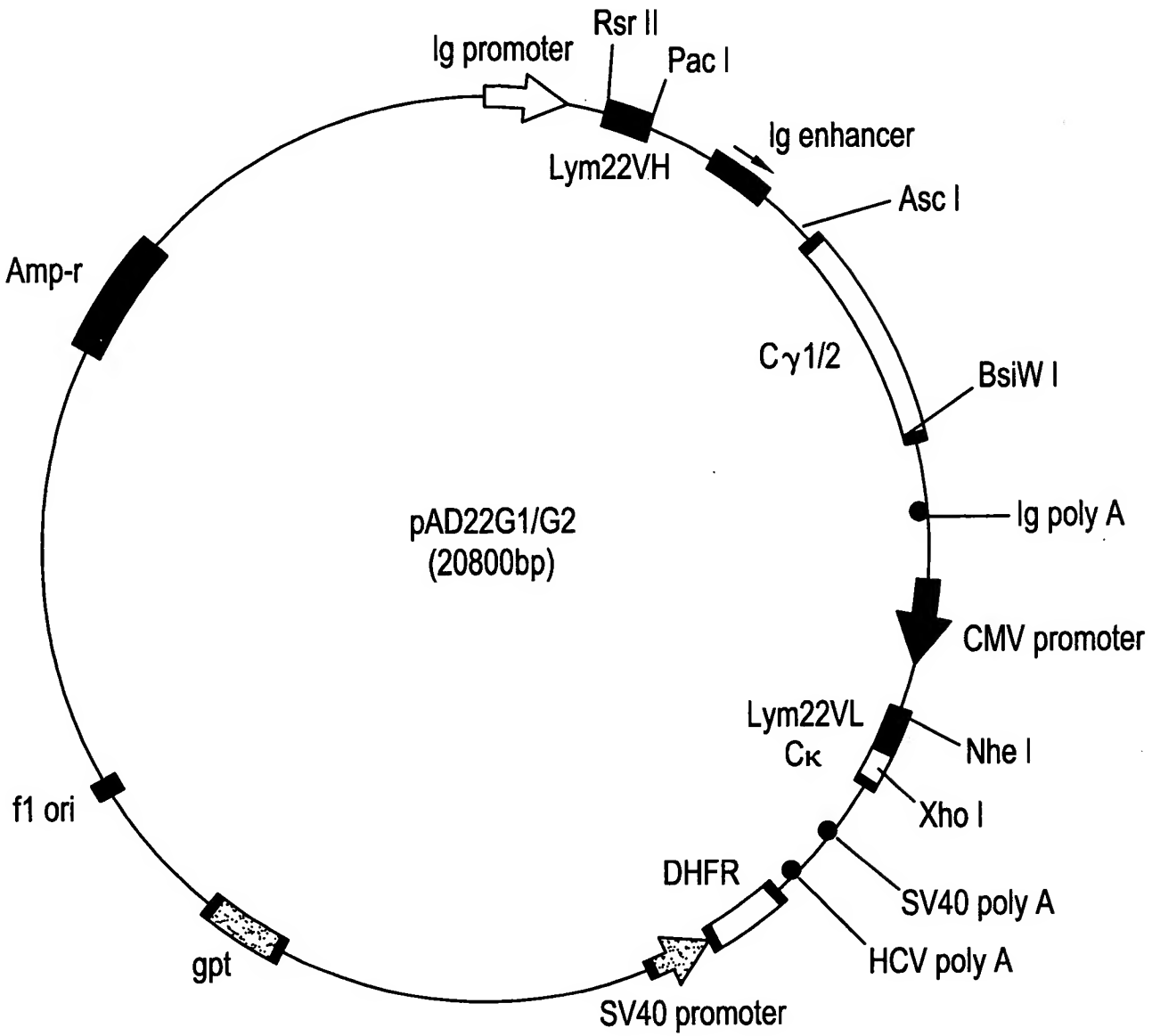


FIG. 77

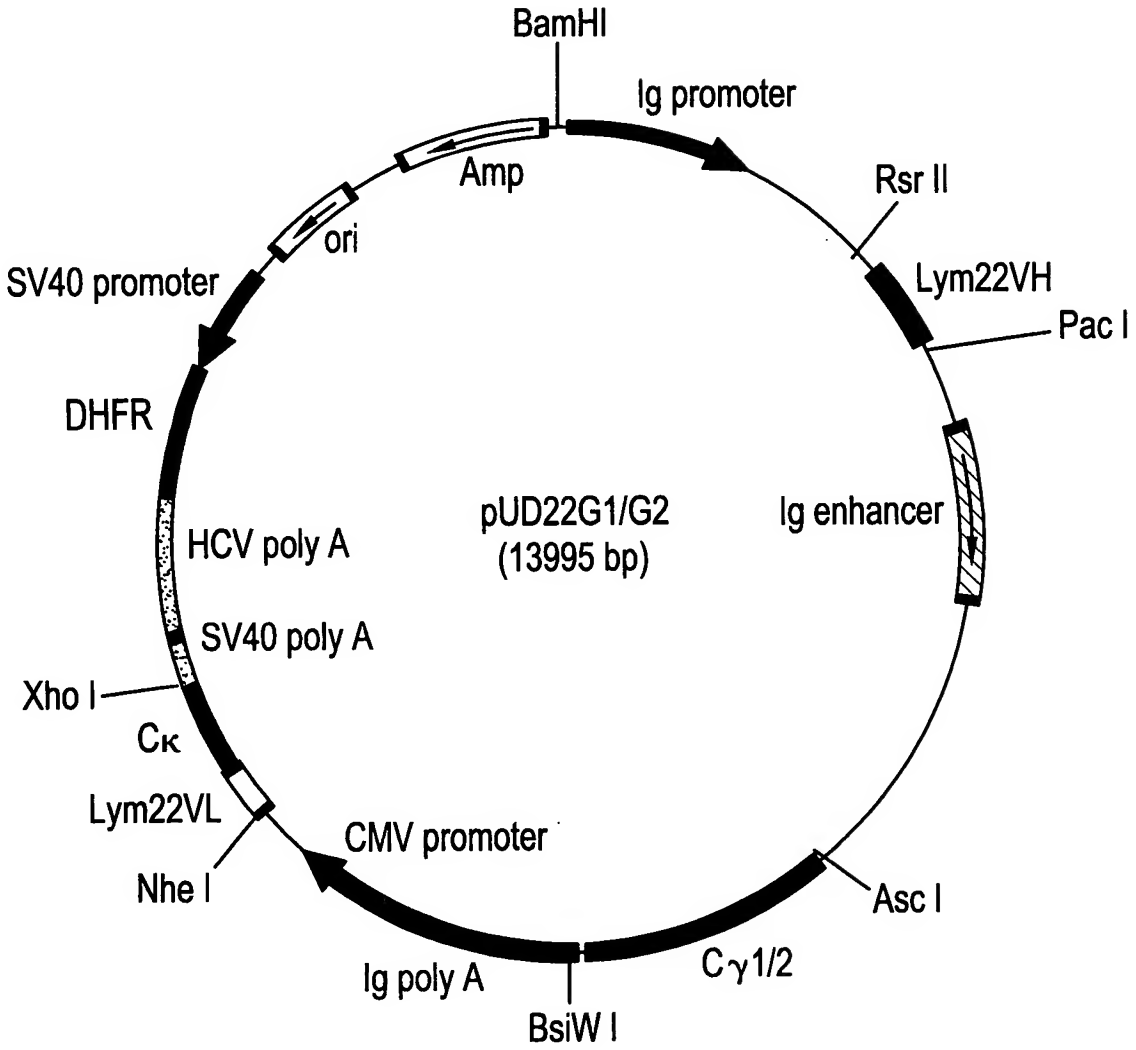


FIG. 78

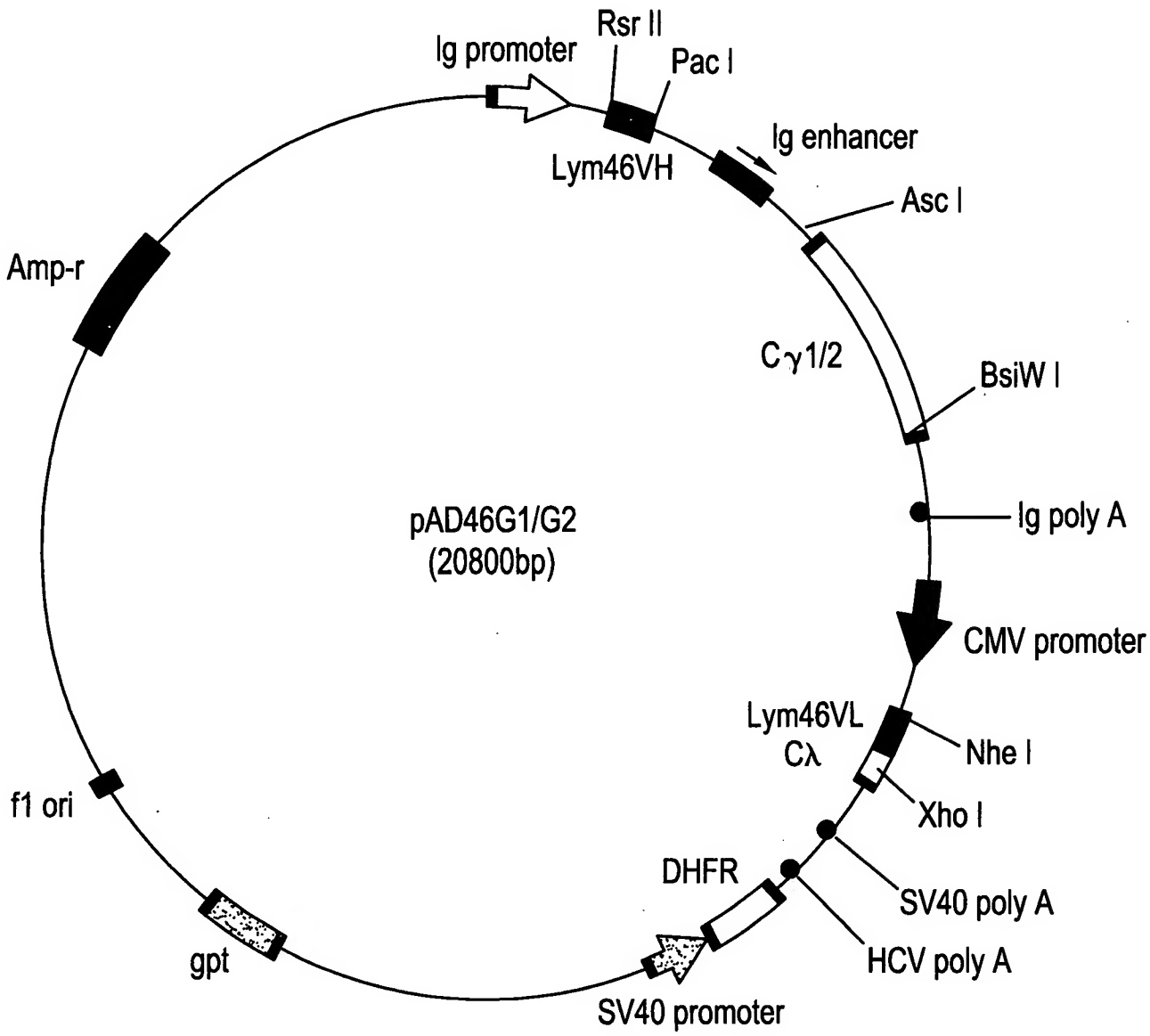


FIG. 79

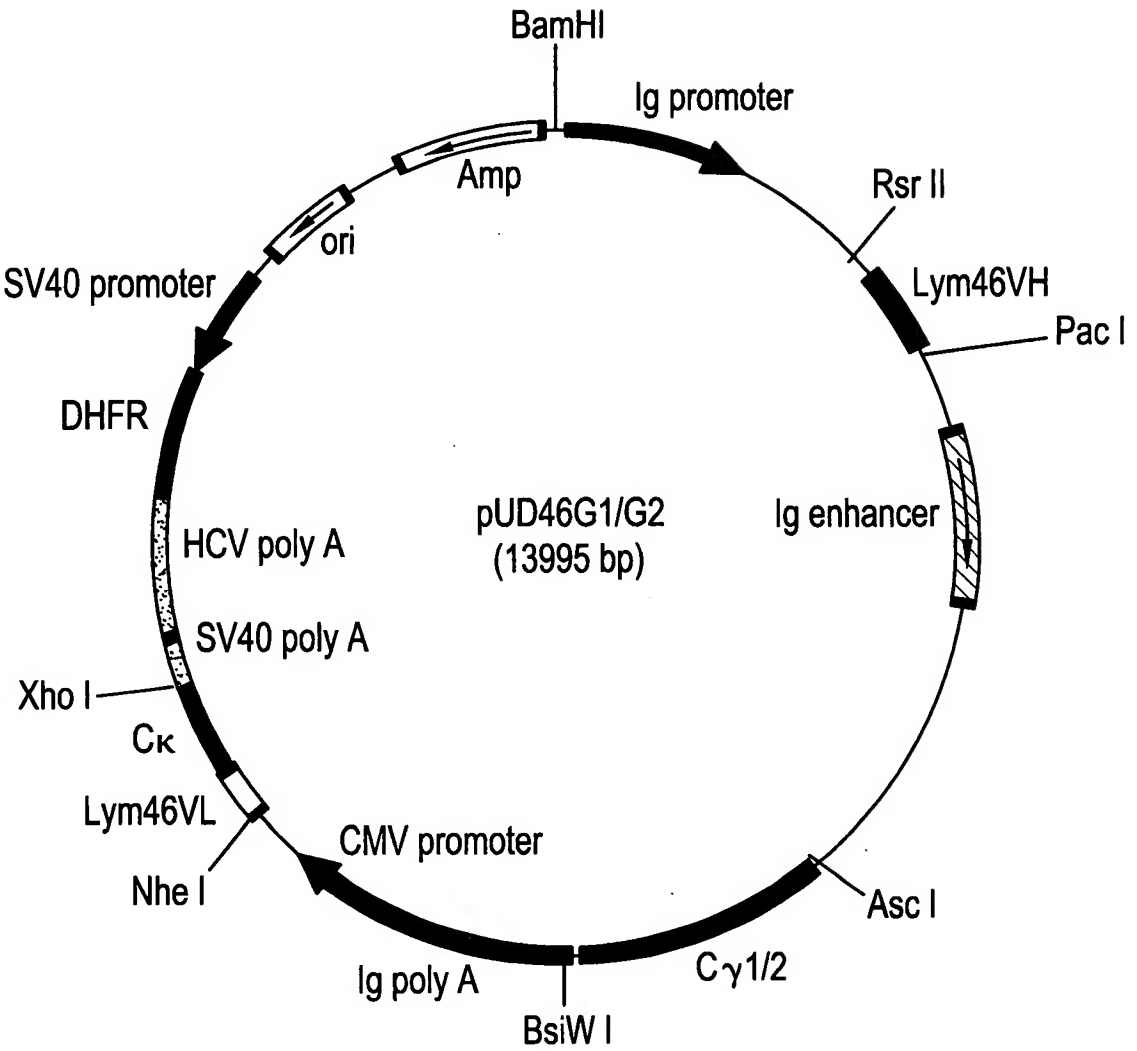


FIG. 80A

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

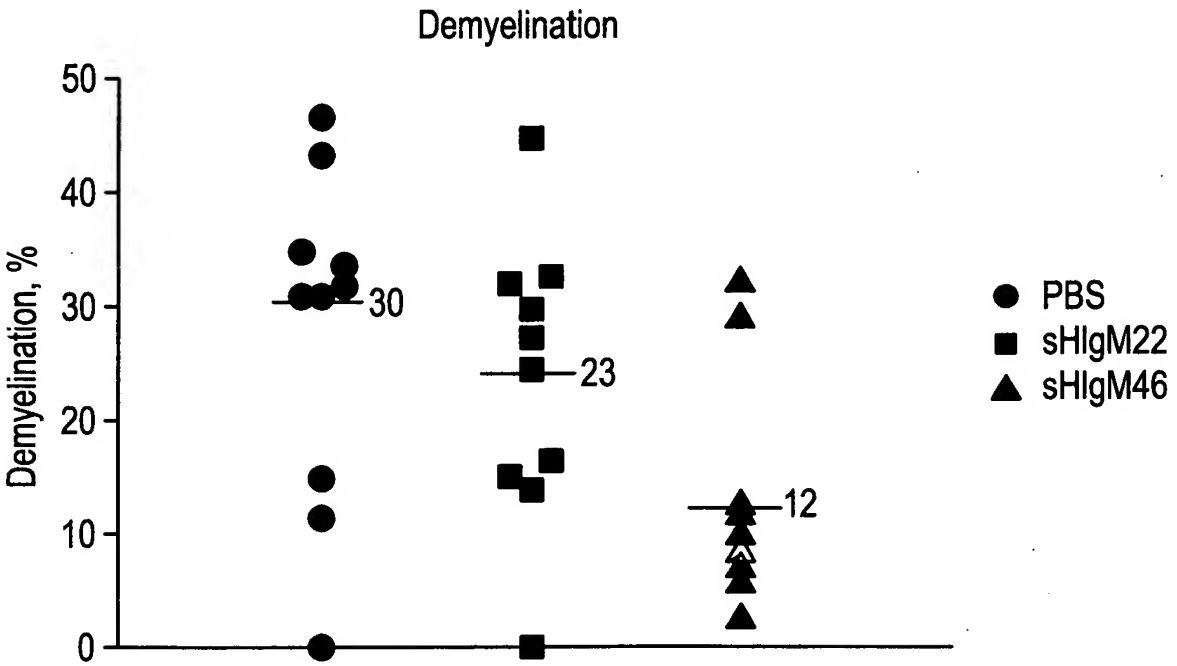


FIG. 80B

TMEV Infected SJL Mice
Treated at 21 Days Post Infection

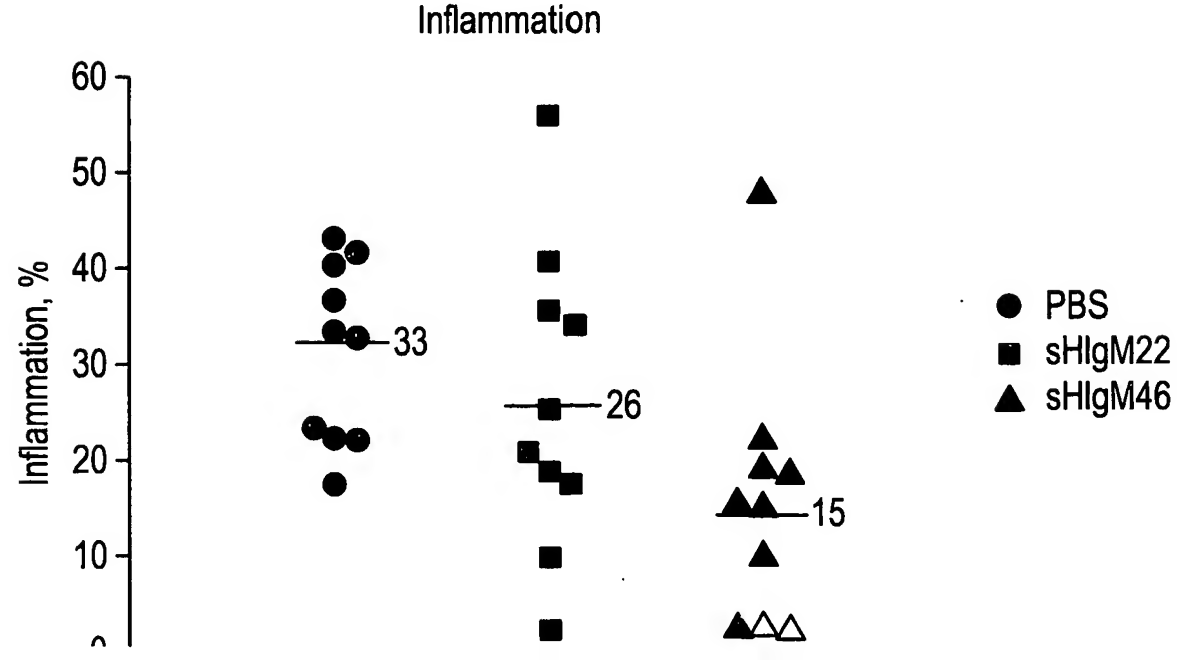


FIG. 81

Chronically TMEV Infected SJL Mice
Treated with sHIgM46 or sHIgM22

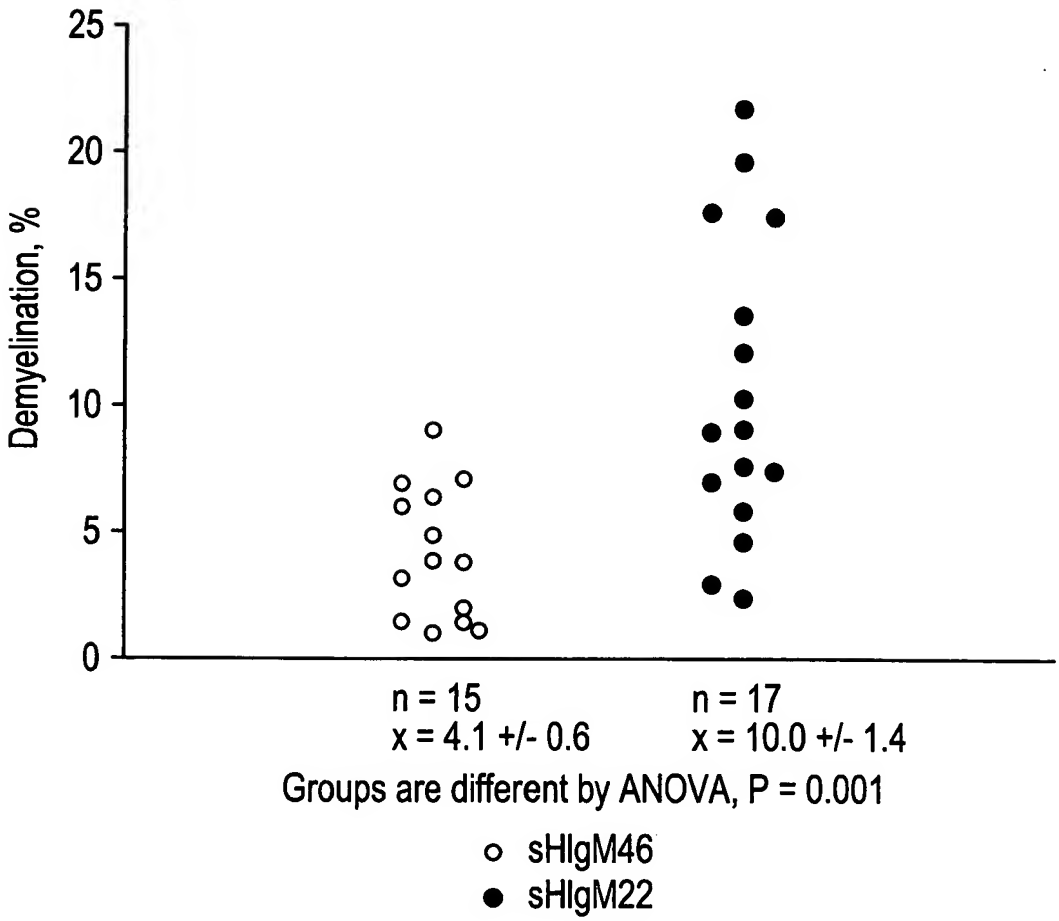


FIG. 82

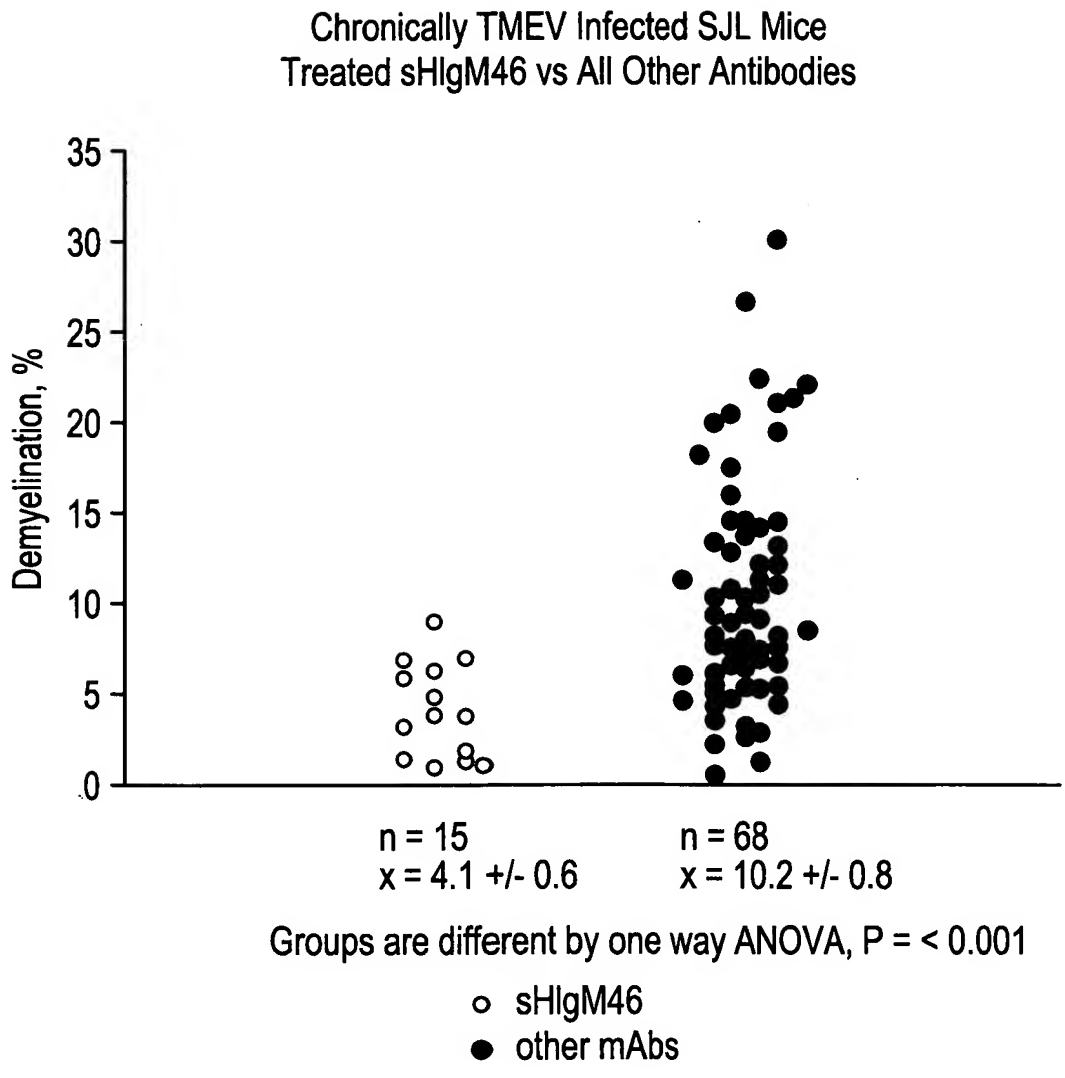


FIG. 83

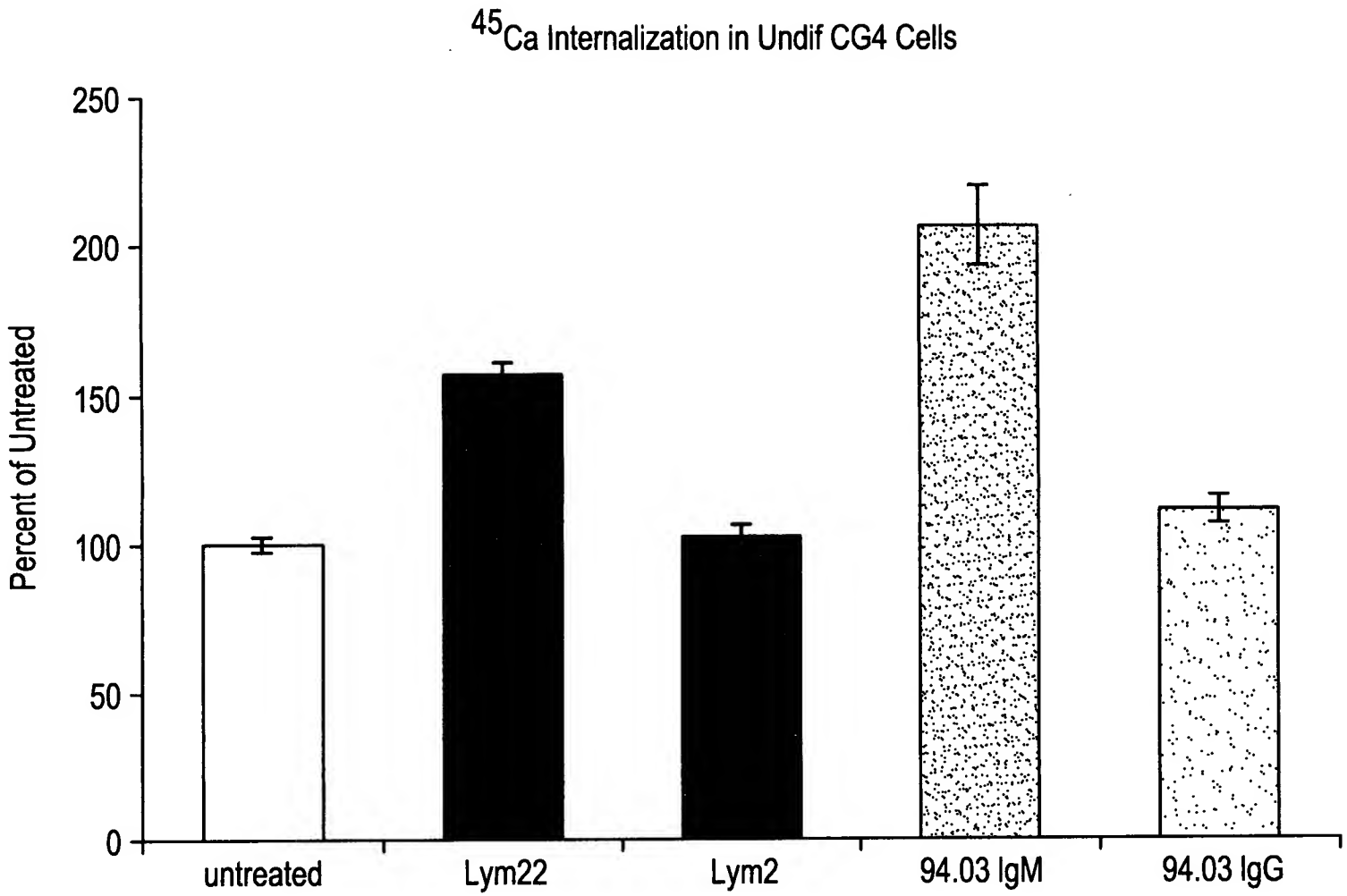


FIG. 84

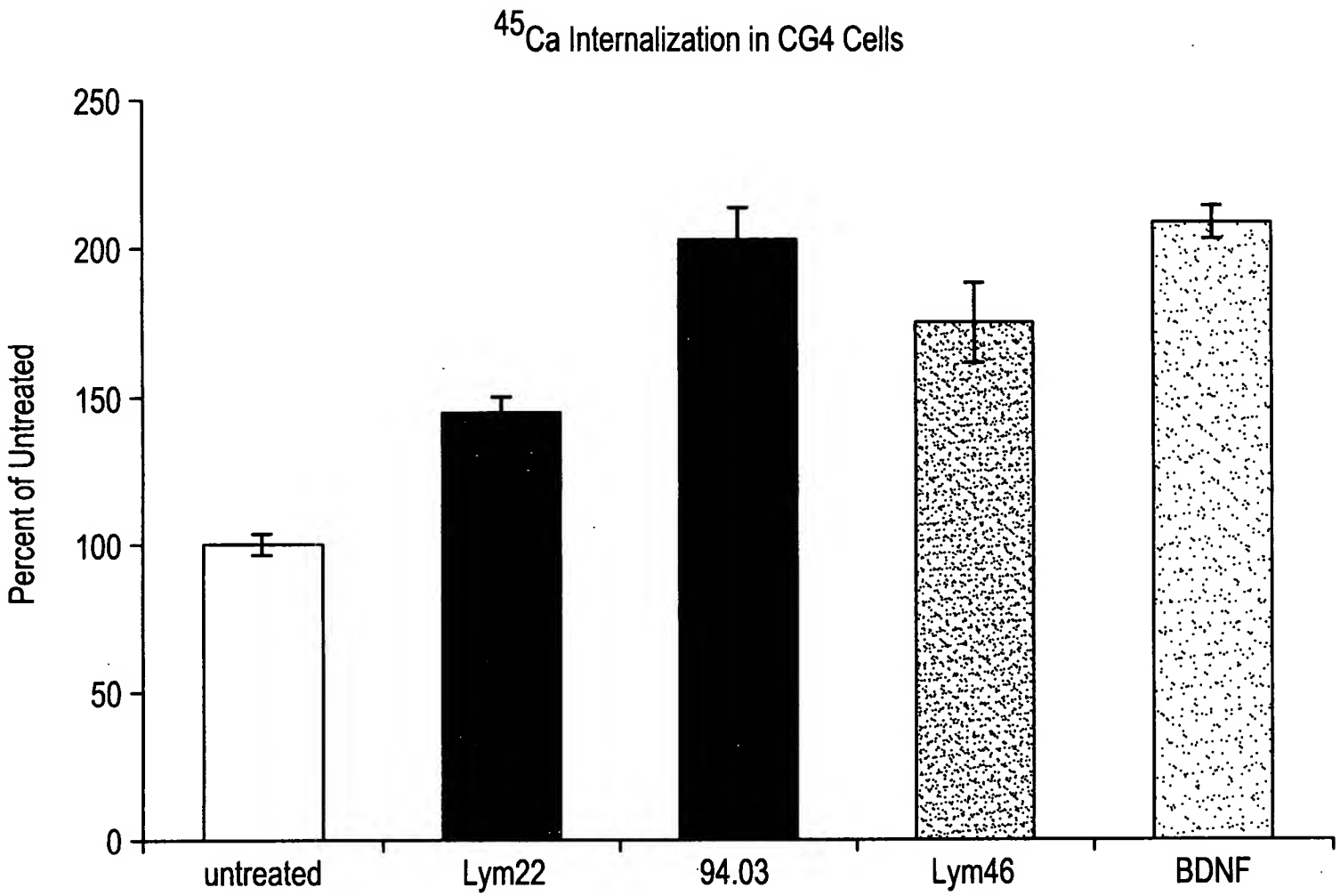


FIG. 85

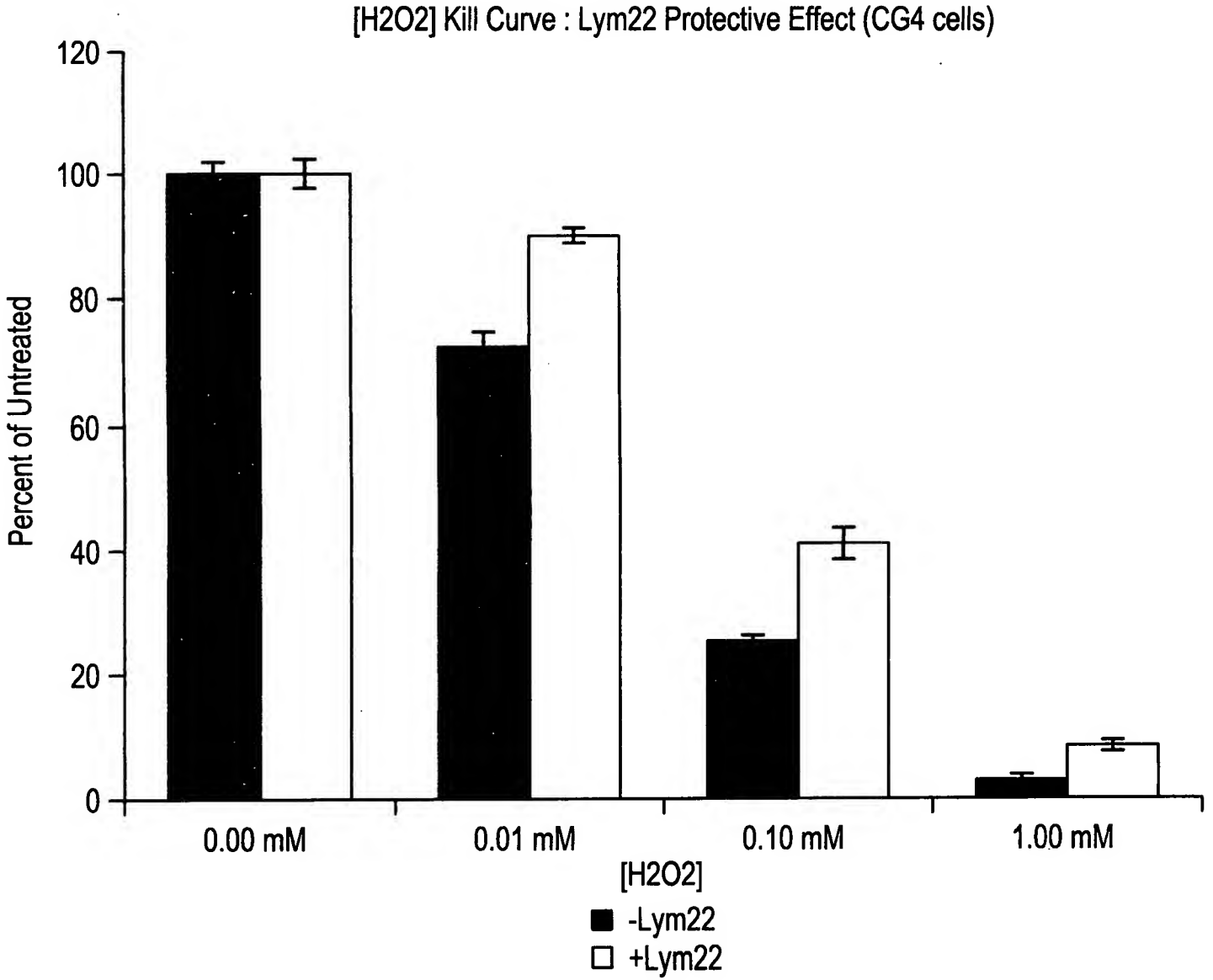


FIG. 86A

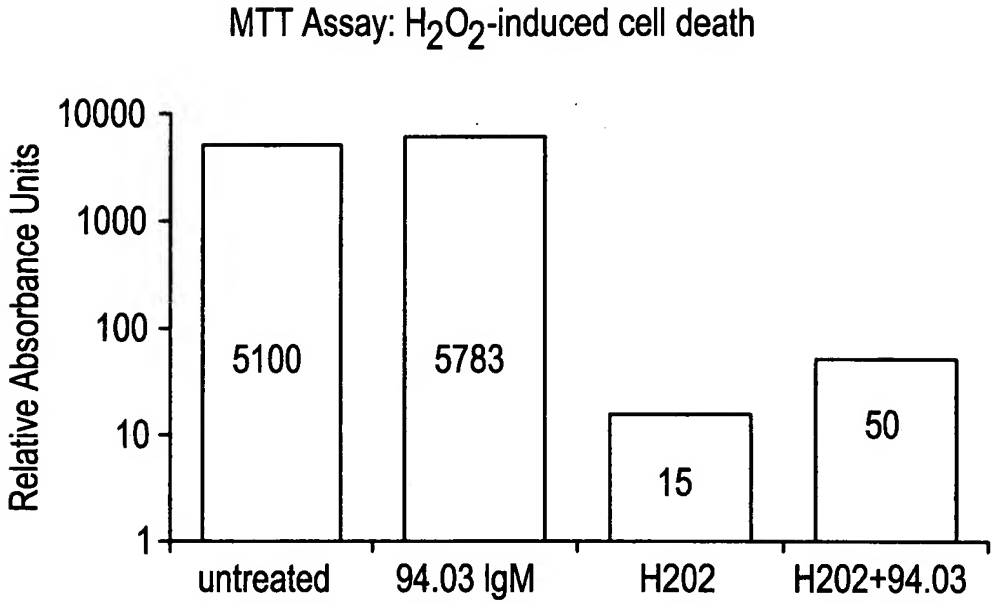


FIG. 86B